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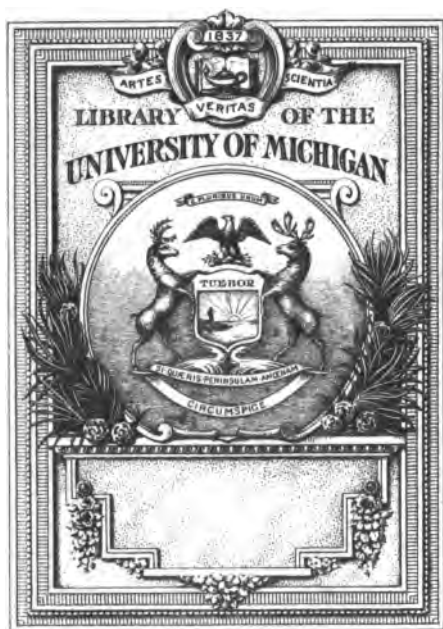
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COLOR STANDARDS  
AND NOMENCLATURE

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RIDGWAY



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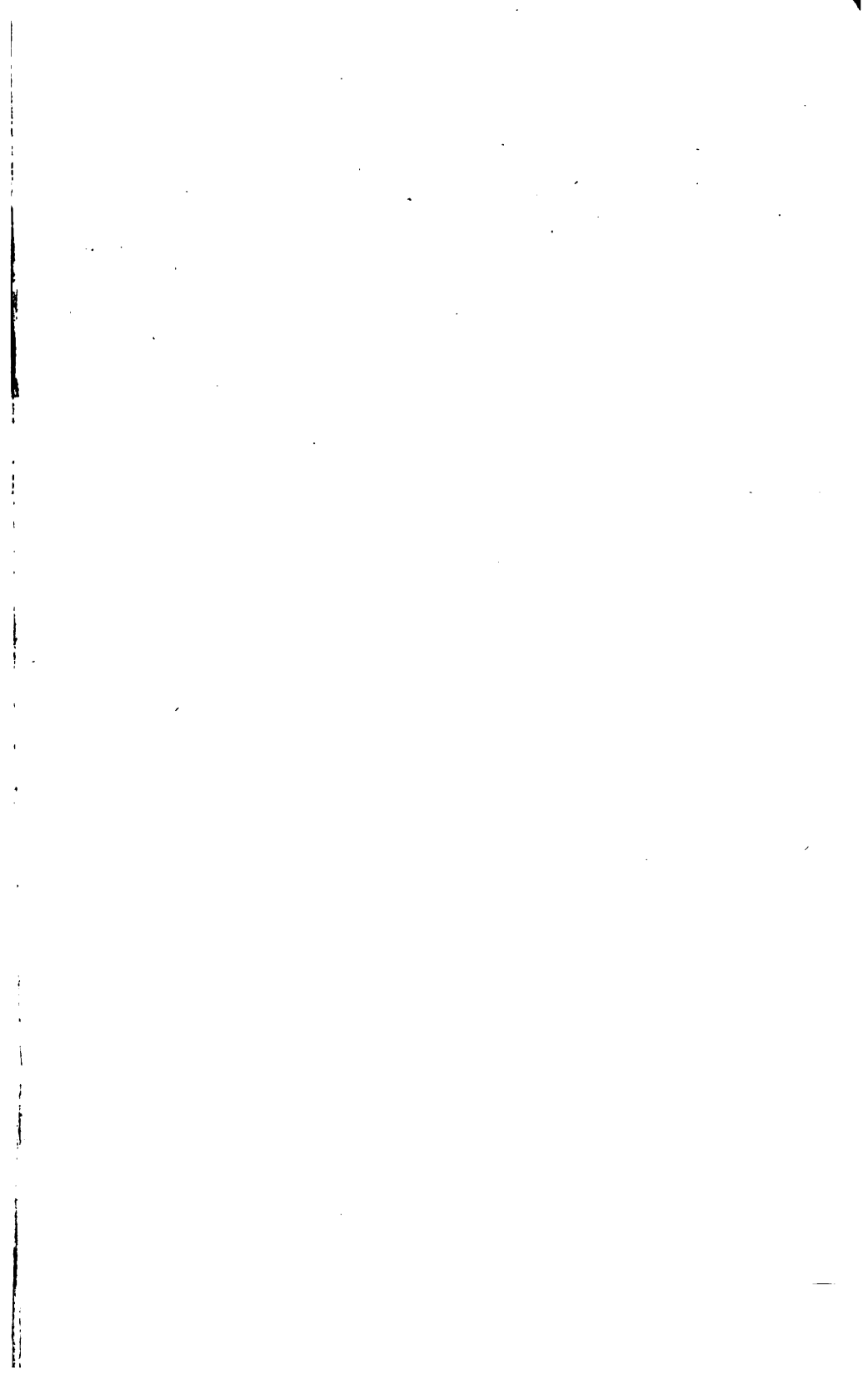
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## EXPLANATION OF PLATES XXII AND XXIV: 5

Reference to these plates was unfortunately overlooked **when** the text was going through the press.

These plates are simply *extras*. They were made at an **early** stage in the preparation of the work and discarded; but **were** finally inserted, merely to add to the number of colors represented.





**COLOR STANDARDS**  
**AND**  
**COLOR NOMENCLATURE**

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BY  
**ROBERT RIDGWAY, M. S., C. M. Z. S., ETC.**  
Curator of the Division of Birds, United States  
National Museum.

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With Fifty-three Colored Plates  
and  
Eleven Hundred and Fifteen Named Colors.

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WASHINGTON, D. C.  
1912.


Published by the Author.





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by  
Robert Ridgway

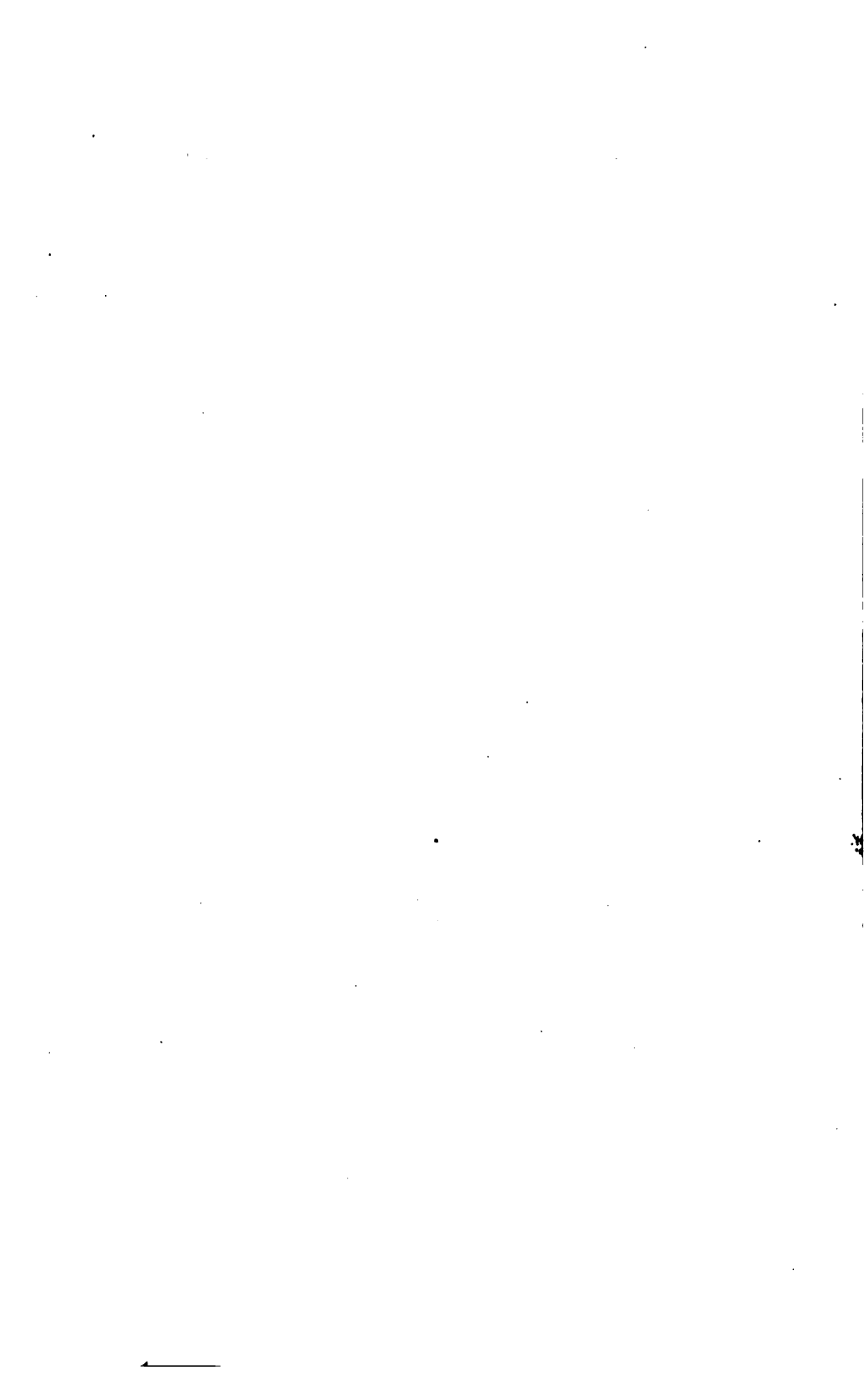
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TO  
Señor Don JOSÉ C. ZELEDÓN  
OF  
SAN JOSÉ, COSTA RICA

True and steadfast friend for more than two-score years;  
host, guide, and companion on excursions among the  
glorious forests, magnificent mountains, and lovely  
plains of his native land; whose encouragement made  
possible the completion of a seemingly hopeless task,  
this book is affectionately and gratefully dedicated.



## PREFACE

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THE motive of this work is THE STANDARDIZATION OF COLORS AND COLOR NAMES.

The terminology of Science, the Arts, and various Industries has been a most important factor in the development of their present high efficiency. Measurements, weights, mathematical and chemical formulæ, and terms which clearly designate practically every variation of form and structure have long been standardized; but the nomenclature of colors remains vague and, for practical purposes, meaningless, thereby seriously impeding progress in almost every branch of industry and research.

Many works on the subject of color have been published, but most of them are purely technical, and pertain to the physics of color, the painter's needs, or to some particular art or industry alone, or in other ways are unsuited for the use of the zoologist, the botanist, the pathologist, or the mineralogist; and the comparatively few works on color intended specially for naturalists have all failed to meet the requirements, either because of an insufficient number of color samples, lack of names or other means of easy identification or designation, or faulty selection and classification of the colors chosen for illustration. More than twenty years ago the author of the present work attempted to supply the deficiency by the publication of a book\* containing 186 samples of named

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\*A | Nomenclature of Colors | for Naturalists, | and | Compendium of Useful Knowledge | for Ornithologists. | By | Robert Ridgway, | Curator, Department of Birds, United States National Museum. | With ten colored plates and seven plates | of outline illustrations. | Boston : | Little, Brown, and Company. | 1886. | (12mo., pp. 129, pls. 17.)

The subject of color and color nomenclature discussed on pages 15-58. Plates i-x, inclusive, represent 186 named colors, hand-painted (stencilled).

colors, but the effort was successful only to the extent that it was an improvement on its predecessors; and, although still the standard of color nomenclature among zoologists and many other naturalists, it nevertheless is seriously defective in the altogether inadequate number of colors represented, and in their unscientific arrangement. Fully realizing his failure, the author, some two or three years later, began to devise plans, gather materials, and acquire special knowledge of the subject, in the hope that he might some day be able to prepare a new work which would fully meet the needs of all who have use for it. Unfortunately, his time has been so fully occupied with other matters that progress has necessarily been slow; but after more than twenty years of sporadic effort it has at last been completed.

Acknowledgments are due to so many friends for helpful suggestions that it is hardly possible to name them all, or to specify the extent or kind of help which each has rendered; but special mention should be made of Mr. LEWIS E. JEWELL, of Johns Hopkins University; Dr. R. M. STRONG, of the University of Chicago; Prof. W. J. SPILLMAN, of the U. S. Department of Agriculture; Mr. WILLIAMS WELCH, of the U. S. Signal Service; Mr. MILTON BRADLEY, of Springfield, Mass.; Dr. P. G. NUTTING, of the U. S. Bureau of Standards; Mr. P. L. RICKER, of the Bureau of Plant Industry, U. S. Department of Agriculture; and Mr. J. L. RIDGWAY, of the U. S. Geological Survey. The late Professor S. P. LANGLEY, then Secretary of the Smithsonian Institution, was good enough to take a kindly interest in this undertaking and gave the author assistance for which he is glad to make acknowledgment. More than to all others, however, is the author deeply indebted to Mr. JOHN E. THAYER, of Lancaster, Mass., and Señor Don JOSÉ C. ZELEDÓN, of San José, Costa Rica, for aid so indispensable that without it the work could not have been completed.

To Dr. G. GRÜBLER & Co., of Leipzig, Germany, the author is under obligations for the gift of a nearly complete set of their celebrated coal-tar dyes, which have proven quite necessary to the work, especially in the coloring of the Maxwell disks on which the color scheme is based.

The reproduction of the plates has been a difficult matter, involving not only expensive experimentation, but more than three

years of unremitting labor. Vastly different from the ordinary lines of commercial color work, the correct copying of each one of the 1115 colors of the original plates developed many perplexing and often discouraging problems, which were finally solved through Mr. A. B. HOEN's expert knowledge of chemistry and pigments; the skill, industry, and patience of the firm's head colorist, Mr. FRANK PORTUGAL, and the personal interest of both these gentlemen. It is, therefore, with the greatest pleasure that the author's grateful acknowledgment is made to the firm of A. HOEN & COMPANY for the satisfactory manner in which they have fulfilled their contract.

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## PROLOGUE

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As stated in the Preface, the purpose of this work is the standardization of colors and color nomenclature, so that naturalists or others who may have occasion to write or speak of colors may do so with the certainty that there need be no question as to what particular tint, shade, or degree of grayness, of any color or hue is meant. Therefore, it is unnecessary to treat of the subject from any other point of view; it will be sufficient to say that this work is based on a thorough study of the subject from every standpoint, and that practically all authoritative works on the subject of color have been carefully consulted.\*

PLAN.—The scientific arrangement of colors in this work is based essentially on the suggestions of Professor J. H. Pillsbury for a scheme of color standards,† which have also been the basis of several other efforts toward the same end, as the plates in Milton Bradley's "Elementary Color" and educational colored papers, Prang's charts of standard colors, Klinkseick and Valette's "Code des Couleurs," etc.; but while all these present a scientifically arranged color-scheme and more or less adequate

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\*Titles of several books on the subject which are especially recommended to the lay student of chromatology are given at the end of this text.

†See *Science*, June 9, 1893, and *Nature*, Vol. LII, No. 1347, Aug. 22, 1895, pp. 390-392.



number of colors they all fail to supply a ready or convenient means of identifying and designating the colors—the principal utility of a work of this kind. It is in the latter respect that the present work is believed to meet, more nearly than any other at least, this essential requirement, and in this consists whatever originality may be claimed for it.

The “key” to the classification or arrangement herewith presented is, of course, the solar spectrum, with its six fundamental colors and intermediate hues, augmented by the series of hues connecting violet with red, which the spectrum fails to show. If, with the red-violets and violet-reds thus added to the spectrum hues, the band forming this scale be joined end to end a circle is formed in which there is continuously a gradual change of hue, step by step, from red through orange-red and red-orange to orange; orange through yellow-orange and orange-yellow to yellow; yellow through green-yellow and yellow-green to green; green through blue-green and green-blue to blue; blue through violet-blue and blue-violet to violet; and violet through red-violet and violet-red to red—the starting-point—with intermediate connecting hues. In the solar spectrum, both prismatic and grating, but especially the former, the spaces between the adjoining distinct colors are very unequal; therefore for the present purpose an ideal scale must be constructed, so that an approximately equal number of equally distinct connecting hues shall be shown. Distinctions of hue appreciable to the normal eye are so very numerous\* that the criterion of convenience or practicability must determine the number of segments into which the ideal chromatic scale or circle may be divided in order to best serve the purpose in view. Careful experiment seems to have

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\*According to Aubert more than 1000 hues are distinguishable in the spectrum, though among them all the hues between violet and red are wanting.

demonstrated that thirty-six is the practicable limit, and accordingly that number has been adopted.\* If the number of intermediate hues were equal in all cases there would, in this scheme, be five between each two adjacent fundamental colors of the spectrum; but a greater number of recognizably distinct hues is obviously necessary in some cases than in others; for example, spectrum orange is decidedly nearer in hue to red than to yellow, and therefore the number of intermediates required on each side of the orange is different, being in the proportion of four for the red-orange series to five for the orange-yellow, and similarly six are required for the violet-red series, while four suffice for the blue-violet hues.

There is no known means by which we can measure the proportion of two or more *pigments* in any given mixture, "because color-effect cannot be measured by the pint of mixed paint or the ounce of dry pigment;"† but, fortunately, we have a very exact method, in the color-wheel and Maxwell disks, by which the relative proportions of two or more *colors* in any mixture may be precisely measured. This method has been used in the painting of every one of the 1115 colors of the present work, by means of one disk to represent each one of the thirty-six colors (both pure and "broken"), together with a black, a white, and a neutral gray disk, the last being a match in color to the gray resulting from the mixture of red, green and violet on the color-wheel;‡ the neutral gray disk, however, being used only for the making of disks for the broken series of colors (' , " , ' ' , ' ' ' , and ' ' ' ' ) and for the scale of neutral grays (Plate

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\*That is to say, the practical limit for pictorial representation of the colors in their various modifications.

†Milton Bradley: *Elementary Color*, p. 18.

‡See colored figure on frontispiece.

#### 4 COLOR STANDARDS AND NOMENCLATURE.

LIII.) These colored disks are slit on one side from center to circumference, and therefore by interlocking two or more they may be adjusted so that either occupies any desired percentage of the whole area, which may be very precisely determined by a scale of 100 segments shown on the outer edge of a larger disk on which the colored disks are superimposed. When connected with the color-wheel and adjusted as may be desired, and then rapidly revolved, the two or more distinct colors resolve themselves into a single uniform composite color, whose elements are shown, in their relative proportion, by the scale surrounding the disks.\*

The scales (both horizontal and vertical) of the present work are all prepared directly from definite color-wheel formulæ, based on carefully calculated curves; the thirty-six pure spectrum hues, represented

\*See the colored figure on the frontispiece of this work, which clearly illustrates this method of color measurement. Larger disks of spectrum red, green, and violet are interlocked and adjusted so that they present, respectively, 32, 42, and 26 per cent. of the circumference; superimposed on these is a single smaller disk of neutral gray, and on this two still smaller disks of black and white, the former occupying 79, the latter 21, per cent. of the area. The result of this combination of colors, when the disks are rapidly revolved, is that the entire surface becomes a uniform neutral gray precisely like the middle disk, which blends so completely with the color inside and outside its limits that no trace of division can be detected. Hence, neutral gray equals a combination of red 32, green 42, and violet 26 per cent., and also equals a combination of black 79 and white 21 per cent. As further illustrating the point, it may be mentioned that not only does the above-mentioned combination of the three primary colors equal neutral gray but so also does the combination of any color ("secondary" or "tertiary" as well as primary) with its complementary, though the darkness or lightness of the gray varies somewhat, as the following table shows:

SPECTRUM COLOR.		COMPLEMENTARY COLOR.		EQUIVALENT GRAY.	
Name.	Per Cent.	Per Cent.	Composition.	Black.	White.
Red .....	44	56	Blue 41 + Green 59.	72.5	27.5
Orange.....	28.5	71.5	Blue 51.5 + Green 48.5.	69	31
Yellow .....	33	67	Blue 60.5 + Violet 39.5.	64	36
Green .....	51	49	Red 57.5 + Violet 42.5.	73	27
Blue .....	64	36	Yellow 82 + Orange 18.	62	37
Violet.....	62.5	37.5	Yellow 69 + Green 31.	61.5	38.5

by the middle horizontal line of color-squares on Plates I-XII (together with an equal number of intermediates represented by blank spaces), requiring a separate curve and consequently different relative proportions of the two component colors for each series of hues—that is, the series from red to orange, orange to yellow, yellow to green, green to blue, blue to violet, and violet to red, respectively; but the progressive increments of white in the scales of tints, black in those of shades, and neutral gray in the several series of broken colors are exactly the same in every case. The first series of Plates (I-XII) shows the pure, full spectrum colors and intermediate hues (middle horizontal line, nos. 1-72),\* each with its vertical scale of tints (upward, *a-g*) and shades (downward, *h-n*), the increments of white for the tints being 9.5, 22.5, and 45 per cent., respectively, those of black in the shades being 45, 70.5, and 87.5 per cent. The remaining Plates show these same thirty-six colors or hues in exactly the same order and similarly modified (vertically) by precisely the same progressive increments of white (upward) and black (downward), but all the colors are dulled by admixture of neutral gray; the first series (1'-72', Plates XIII-XXVI) containing 32 per cent. of neutral gray, the second (1''-72'', Plates XXVII-XXXVIII) 58 per cent., the third (1'''-72''', Plates XXXIX-XLIV) 77 per cent., and the fourth (1''''-72'''', Plates XLV-L) 90 per cent. The last three Plates (LI-LIII) show the six spectrum colors† (also purple, the intermediate between violet and red) still further dulled by admixture of 95.5 per cent. of neutral

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\*The number is doubled so that every other one represents an intermediate hue not shown in color.

†Owing to the circumstance that spectrum orange does not, at least when mixed with gray, fairly represent a medium hue between red and orange, being much nearer the former, a hue much near to yellow (yellow-orange, No. 15) has been selected.

gray, these being in reality colored grays; to which are added a scale of neutral gray and one of carbon gray, the former being the gray resulting from mixture of the three primary colors (red 32, green 42, violet 26 per cent., which in relative darkness equals black 79.5, white 20.5 per cent.); the latter being the gray produced by mixture of lamp black and Chinese white, and the scale a reproduction of that in the author's first "Nomenclature of Colors" (1886, Plate II, nos. 2-10). It should be emphasized that in all cases except the scale of carbon grays, only the disks representing the middle horizontal series of colors (both pure and broken) have been used, in combination with a black and a white disk, respectively, to make the colors of the vertical scales of tints and shades.

The coloring of a satisfactory set of disks to represent the thirty-six pure spectrum colors and hues was a matter of extreme difficulty, many hundreds having been painted and discarded before the desired result was achieved. Several serious problems were involved, the matter of change of hue through chemical reaction of the combined pigments or dyes\* (especially the latter) being almost as troublesome as that of securing the proper degree of difference between each adjoining pair of hues. The method by which satisfactory results were finally secured was as follows: First, six disks were colored to represent each of the fundamental spectrum colors,

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\*For satisfactory color-wheel work it is necessary to discard practically all the so-called artists' colors, as being much too dull to even approximately represent the colors of the spectrum, and to substitute carefully selected aniline or coal-tar dyes, of which, fortunately, there is a very large number of remarkable purity of hue. Indeed, the work of most color-physicists is vitiated by their use of such crude colors as vermilion, carmine, scarlet-lake, chrome yellow, emerald green, Prussian blue, etc. (For a list of dyes and pigments used in preparing the Maxwell disks representing the thirty-six colors of the chromatic scale, see pages 26, 27.)

according to the author's conception of them.\* These six disks were then placed against a suitable background (a neutral gray), in spectrum sequence, with wide intervals for the accommodation of connecting series of disks, which were then colored so as to represent an apparently even transition from one to the other. When this very difficult task had been done as well as the eye alone could judge, each intermediate was then measured on the color-wheel and the relative proportions (in percentages) of its two component colors recorded. After this had been done for all the intermediate hues each series (the red-orange, orange-yellow, yellow-green, green-blue, blue-violet, and violet-red) was taken separately and a curve constructed on cross-section paper from the recorded ratios. These curves were found to be in all cases more or less irregular or unsymmetrical, but nevertheless were sufficiently near correct to serve as a basis for a symmetrical curve; and after the points out of

\*In fixing the exact position or wave-length of the spectrum colors considerable latitude is allowable, the element of "personal equation"—that is, difference in the conception of different persons as to just where the reddest red, greenest green, etc., are located, accounting for the considerable disagreement among chromatologists as to the wave-lengths. The following table, showing the average, mean, and extreme wave-length of each of the spectrum colors as given by nine or more authorities together with those of the present work (as determined by Dr. P. G. Nutting, Associate Physicist of the U. S. Bureau of Standards) is of interest in this connection:

	This work.	Average of 9-12 authorities.	Extremes of 9-12 authorities.	Mean of 9-12 authorities.
Red .....	644	6770	6440-7028	6734 (10)
Orange .....	598 $\pm$ 2	6074	5892-6300	6096 (9)
Yellow .....	577 $\pm$ 1	5786	5640-5850	5745 (10)
Green .....	520 $\pm$ 10	5235	5050-5335	5193 (11)
Blue .....	473 $\pm$ 3	4738	4520-4861	4680 (12)
Violet .....	410	4176	4050-4330	4190 (10)

From this table it will be seen that the red of this work is appreciably more orange than that of others, the orange slightly more yellowish, and the violet a little less bluish than the average; but the author is assured by Dr. Nutting that these standards are exceptionally accurate.

proper line were suitably relocated the two component colors were correspondingly readjusted on the color-wheel and each faulty disk corrected (or a new one painted) until it exactly matched the required combination. The scales representing the tints and shades of each color, and also the gray or broken colors were similarly determined by corrected curves.\*

By the method adopted of running each of the thirty-six spectrum hues through a scale of tints and shades, and repeating the combination through several series modified by increasing increments of neutral gray, practically the entire possible range of color variation is covered,† rendering it an easy matter to locate in the plates, either among the colors actually shown or in an intermediate space, any color which it is desired to match; and where short distinctive names have not been found (their place being, tentatively, supplied by compound names), as, necessarily, must often be the case, any color or intermediate between any two colors, either as to hue, tint, or shade, may be readily designated by the very simple system of symbols (numerals and letters) employed.‡

In order to designate any color for which a satisfactory name cannot be found, or one not represented on the plates, it is only necessary to proceed as follows: Suppose the color in question is nearest 1 on Plate I; say, for example, is intermediate in hue between 1 (spectrum red) and 3 (scarlet-red), or in other words if represented in color its position would be in the uncol-

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\*The percentages are given in tables on pages 23 and 25.

†That is to say, theoretically. Unfortunately it seems to be beyond the colorists' skill to reproduce true shades of the pure colors, all showing a more or less decided admixture of gray, resulting in a series of broken or dull shades. (See pages 23 and 24.)

‡Although only 1115 different colors are actually shown on the plates the system is really equivalent to the presentation of considerably more than 4000 distinguishable and designatable colors.

ored space designated as no. 2; and in tone between the full color (middle horizontal line) and tint *b*. Its designation, therefore, is *2a*. Exactly the same method applies to any of the other blank spaces, as well as to the colors themselves, except that in case of the broken colors the "primes" (' , " , ' ' , ' ' ' , or ' ' ' ' ) are to be affixed to the hue number. First locate the *hue*, designated by number, then the *tone*, designated by lower case letter, the full, pure colors of the middle horizontal row being designated by number alone.

COLOR NAMES.—While it is true that the naming of colors as usually employed has so little to do with the purely technical aspects of chromatology or color-physics that, as Von Bezold remarks\* "we are in reality dealing with the peculiarities of language," it is equally true that a collection of color standards designed expressly for the purpose of identifying and designating particular colors can best attain this object by the use of a carefully selected nomenclature. In other words, the prime necessity is to standardize both colors and color names, by elimination of the element of "personal equation" in the matter. In no other way can agreement be reached as to the distinction between "violet" and "purple," two color names quite generally used interchangeably or synonymously but in reality belonging to quite distinct hues, or that any other color name can be definitely fixed. Various methods of handling the matter of color in zoological and botanical descriptions, etc., by the avoidance of color names and substitution therefor of symbols, numerals, or mechanical contrivances (as color-wheel and spectrum analyses, color-spheres, etc.) have been devised but all have been found impracticable or unsatisfactory. The author has taken the trouble to get an expression of opinion in this matter from many

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\*The Theory of Color (American edition, 1876), p. 99.



naturalists and others, and the preference for color-names very greatly predominates; consequently, whenever it has been possible to find a name which seems suitable for any color in this work it has been done, leaving as few as possible unnamed, and for these some other means must be devised for their designation. (See page 8). The selection of appropriate names for the colors depicted on the Plates has been in some cases a matter of considerable difficulty. With regard to certain ones it may appear that the names adopted are not entirely satisfactory; but, to forestall such criticism, it may be explained that the purpose of these Plates is not to show the color of the particular objects or substances which the names suggest, but to provide appropriate, or at least approximately appropriate, names for the colors which it has seemed desirable to represent. In other words, certain colors are selected for illustration, for which names must be provided; and when names that are exclusively pertinent or otherwise entirely satisfactory are not at hand, they must be looked up or invented. It should also be borne in mind that almost any object or substance varies more or less in color; and that therefore if the "orange," "lemon," "chestnut" or "lilac" of the Plates does not exactly match in color the particular orange, lemon, chestnut or lilac which one may compare it with, it may (in fact does) correspond with other specimens. Without standardization, even if arbitrary, color nomenclature must, necessarily, remain in its present condition of absolute chaos. Even the standard pigments are not constant in color, practically every one of them being subject to more or less variation in hue or tone, different samples from the same manufacturer sometimes varying to the extent of several tones or hues of the present work; indeed, in every case where two or more samples of the same color have been com-

pared it has been found that no two are exactly alike, the difference often being very great. For example: Of five samples of "vandyke brown" only two are approximately similar, each of the other three being widely different, not only from one another but from the other two, one being a blackish brown, another reddish brown, the third a yellowish orange-brown. Of eleven samples of "olive" no two are closely similar, the color ranging from a shade of dull (grayish) blue-green to orange-brown, dark brownish gray, and light yellowish olive; and the same or nearly the same degree of variation is seen in absolutely every color examined, showing very clearly the utter worthlessness of color names unless fixed or standardized.

In order to obtain as many color names as possible for standardization it has been necessary to draw from all available sources. Several thousand samples of named colors have therefore been collected, and for convenience of reference and comparison gummed to card catalogue cards, with the name, source, and other data thereon. These include the colors from many standard works, among them Werner's "Nomenclature of Colours" (Syme's edition, 1821), Hay's "Nomenclature of Colours" (1846), Ridgway's "Nomenclature of Colors" (1886), Saccardo's "Chromataxia" (1891), Mathews' "Chart of Correct Colors of Flowers" (American Florist, 1891), Willson and Calkins' "Familiar Colors," Oberthur and Dauthenay's "Repertoire des Couleurs" (1905), Leidel's "Hints on Tints" (1893), "Lefévré's Matieres Colorantes Artificiales" (1896), the Standard Dictionary chart of "typical colors," the educational colored papers of Milton Bradley and Prang, and many others; and besides these practically all of the artists' oil, water, and dry colors, manufactured by Winsor and Newton, F. Schoenfeld and Co., Charles Roberson and Co.,

George Rowney and Co., Madderton and Co., R. Ackermann and Co., Bourgeois, Binant, Chenal, Le Franc, Devoe, Raynolds, Osborne, Bradley, Hatfield and others; also the coal-tar or aniline dyes of Dr. G. Grüber & Co., Continental Color and Chemical Co., and Henry Heil Chemical Co., and the well known Diamond Dyes; chromo-lithographic inks, embroidery silks, etc., etc.

The material from which to select suitable color names was greatly augmented, almost at the last moment, from two sources, as follows: (1) A very large collection of color-samples (unfortunately mostly unnamed) collected and mounted on cards by Mr. Frederick A. Wampole, a talented young artist, to whom was delegated, by a Committee of the American Mycological Society, the task of preparing a nomenclature of colors based upon spectroscopic determinations, but which, unfortunately, the untimely death of Mr. Wampole prevented from progressing beyond the accumulation of this collection. For the use of this material I am indebted to the courtesy of Dr. Frederick V. Coville, Botanist of the U. S. Department of Agriculture, and Mr. P. L. Ricker, Assistant Botanist, Bureau of Plant Industry, in the same Department. (2) A splendid collection of colored Japanese silks, taffetas, velvets, and other dress goods, kindly sent me by Mr. C. H. Hospital, of the silk department of the firm of Woodward and Lothrop, Washington, D. C. The very large number of colors represented in this collection are all named and have afforded a considerable number of the names adopted in the present work.

For obvious reasons it has, of course, been necessary to ignore many trade names, through which the popular nomenclature of colors has become involved in really chaotic confusion rendered more confounded by the continual coinage of new names, many of them synonymous

and most of them vague and variable in their application. Most of them are invented, apparently without care or judgment, by the dyer or manufacturer of fabrics, and are as capricious in their meaning as in their origin; for example: Such fanciful names as "zulu," "serpent green," "baby blue," "new old rose," "London smoke," etc., and such nonsensical names as "ashes of roses" and "elephant's breath." An inspection of the sample books of manufacturers of fancy goods (such as embroidery silks and crewels, ribbons, velvets, and other dress- and upholstery-goods) is sufficient not only to illustrate the above observations, but to show also the absolute want of system or classification and the general unavailability of these trade names for adoption in a practical color nomenclature. This is very unfortunate, since many of these trade names have the merit of brevity and euphony and lack only the quality of stability

It has been difficult for the author to decide whether the standards of his original "Nomenclature of Colors" (1886) should be retained in the present work. Some of them are admittedly wrong (indeed, certain ones are not as they were intended to be); besides, owing to the method of reproducing the originals (hand stenciling) there is considerable variation in different copies of the book, one or more reprints, necessitating new mixtures of pigments, adding to this lack of uniformity.\* Many persons, however, have urged the retention of the old standards, on the ground that they have been used by so many zoologists and botanists in their writings during the last twenty-five years that they have become estab-

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\*In the present work the possibility of variation between different copies is wholly eliminated by a very different process of reproduction. Each color, for the entire edition, is painted uniformly on large sheets of paper from a single mixture of pigments, these sheets being then cut into the small squares which represent the colors on the plates.

lished through common usage. This very important consideration has induced the author to retain such of the old standards as can be matched in the present work, even though some of them do not agree strictly with either his own or the usual conception of the colors in question. An asterisk (\*) preceding a color name indicates that the name in question is adopted from the older work, the variation between different copies of the work requiring the selection, in the new one, of a color representing as nearly as possible an average of the former.

In any systematically arranged scheme, unless the number of colors shown is practically unlimited, it will, necessarily, be impossible to find represented thereon a certain proportion of colors comprised among even a very limited number selected at random, or only roughly classified. Hence many (thirty-six, or more than five per cent.) of the colors shown in the old "Nomenclature of Colors" fall into the blank intervals of the present work, being intermediate either in hue or tone, or chroma, sometimes all. It is necessary of course to provide some means for the correlation of these with the present scheme, which is done by the list on page 41, where the position of each is shown.

The question of giving representations of metallic colors in this work was at one time considered; but the idea was abandoned for the reason that these are in reality only ordinary colors reflected from a metallic or burnished surface, or appearing as if so reflected; the actual hue is precisely the same, though often changeable according to angle of impact of the light rays, and relative position of the eye, this changeableness being sometimes due to interference.\* Colors again vary, without actual difference of hue, in regard to quality of texture or surface; that is to say, the color may be quite

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\*See Rood, *Modern Chromatics*, pages 50-52.

lustreless, appearing on a dull, sometimes velvety surface, while again it may be more or less glossy, even to the degree of appearing as if varnished. To deal with these variations, however, requires simply the use of suitable adjectives. For example: To indicate a color which has no lustre or brightness, the adjective *matt* (or *mat*) may be used, in preference to *dull*, which implies reduction in purity or chroma; other adjectives, appropriate in special cases, being *velvety*, *glossy*, *burnished metallic*, *matt-metallic*, etc.

COLOR TERMS.—No other person has presented so forcibly the urgent need for reform in popular nomenclature nor stated so clearly and concisely its shortcomings and the simple remedy, as Mr. Milton Bradley, from one of whose educational pamphlets on the subject\* the following is quoted: "The list of words now employed to express qualities or degrees of color is very small, in fact a half dozen comprise the more common terms, and these are pressed into service on all occasions, and in such varied relations that they not only fail to express anything definite but constantly contradict themselves . . . Tint, Hue and Shade are employed so loosely by the public generally, even by those people who claim to use English correctly, that neither word has a very definite meaning, although each is capable of being as accurately used as any other word in our every day vocabulary" . . .

Certainly one would expect that men of learning, at least, would employ the broader color terms correctly; but some of the highest authorities on color-physics habitually use them interchangeably, as if they were quite synonymous; and even the dictionaries, with few exceptions, give incorrect or "hazy" definitions of these

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\*Some criticisms of Popular Color Definitions and Suggestions for a better Color Nomenclature. Milton Bradley Co., Springfield, Mass. (Small pamphlet of 15 pages).

terms. It is not strictly correct to say a "dark tint" or "light shade" of any color, because a *tint* implies a color *paler* than the full color, while a shade means exactly the opposite; and to say an "orange shade (or tint) of red," a "greenish shade (or tint) of blue," a "bluish shade (or tint) of violet," etc., is an absurdity, for the term *hue*, which specifically and alone refers to relative position in the spectrum scale, without reference to lightness or darkness, is the only one which can correctly be used in such cases.

Indeed the standardization of color terms is almost if not quite as important, in the interest of educational progress, as that of the colors themselves and their names; therefore, to make easy a clear understanding of the specific meaning of each, the following definitions are given:—

*Color*.—The term of widest application, being the only one which can be used to cover the entire range of chromatic manifestation; that is to say, the spectrum colors (together with those between violet and red, not shown in the spectrum) with all their innumerable variations of luminosity, mixture, etc. In a more restricted sense, applied to the six distinct spectrum colors (red, orange, yellow, green, blue, and violet), which are sometimes distinguished as *fundamental colors* or *spectrum colors*.

*Hue*.—While often used interchangeably or synonymously with color, the term *hue* is more properly restricted by special application to those lying between any contiguous pair of spectrum colors (also between violet and purple and between purple and red); as an orange *hue* (not shade or tint, as so often incorrectly said) of red; a yellow *hue* of orange; a greenish *hue* of yellow, a bluish *hue* of green; a violet *hue* of blue, etc.

*Tint*.—Any color (pure or broken) weakened by high illumination or (in the case of pigments) by ad-

mixture of white, or (in the case of dyes or washes) by excess of aqueous or other liquid medium; as, a deep, medium, light, pale or delicate (pallid) *tint* of red. The term cannot correctly be used in any other sense.

*Shade*.—Any color (pure or broken) darkened by shadow or (in the case of pigments) by admixture of black; exactly the opposite of *tint*; as a medium, dark, or very dark (dusky) *shade* of red.

*Tone*.—"Each step in a color scale is a tone of that color."\* The term tone cannot, however, be properly applied to a step in the spectrum scale, in which each contiguous pair of the six distinct spectrum or "fundamental" colors are connected by *hues*. Hence *tone*† is exclusively applicable to the steps in a scale of a single color or hue, comprising the full color (in the center) and graduated tints and shades leading off therefrom in opposite directions; or of neutral gray similarly graduated in tone from the darkest shade to the palest tint. Each one of the colored blocks in the vertical scales of the plates in this work represents a separate tone of that color.

*Scale*.—A linear series of colors showing a gradual transition from one to another, or a similar series of tones of one color. The first is a *chromatic scale*‡ (or scale of colors and hues) and in the plates of this work is represented by each horizontal series; the second is a

\*Milton Bradley: Elementary Color, p. 25.

†Exception has been taken in a recent work ("A Color Notation," by A. H. Munsell) to the use of the term *tone* in this connection, on the ground that its proper use belongs to music, and the term *value* is substituted. The same line of reasoning would, however, certainly require the discarding of *chromatic scale* as a term of music nomenclature, since its derivation is clearly from color (chroma). Furthermore, the word "value" is even more elastic in its application than *tone*, and, all things considered, the present writer, at least, fails to see that any improvement is made by the proposed change.

‡The term *chromatic scale* has unfortunately been appropriated for a very different use (in music); nevertheless it is strictly correct in the present sense while in the other it is not, though firmly established by long usage. The term *spectrum scale* is not adequate, as a substitute, because the spectrum series of colors is incomplete through absence of the hues connecting violet with red, which are necessary to show the full scale of pure colors and hues.



*tone scale*, on the plates running vertically, growing from the full color, in the center, to a pale tint (at the top) and a dark shade (at the bottom). For clearer comprehension of these two distinct scales, each plate of this work may be compared to a sheet of woven fabric; the chromatic scale (horizontal) representing the warp, the luminosity or tone scale (vertical) the woof. A third kind of color scale is represented by adding progressive increments of neutral gray to any color. This is shown by the several series of Plates, of which the first (Plates I-XII, with colors numbered 1-71) represents each step in the spectrum scale unmixed with gray, followed by five other series in which the same colors\* are shown dulled by gradually increasing increments of neutral gray, the first (Plates XIII-XXVI, colors 1'-71') containing 32 per cent., the second (Plates XXVII-XXXVIII, colors 1''-71'') 58 per cent., the third (Plates XXXIX-XLIV, colors 1'''-69''') 77 per cent., the fourth (Plates XLV-L, colors 1''''-69''') 90 per cent., and the fifth (Plates LI-LIII, colors 1''''' , 15''''' , 23''''' , 35''''' , 49''''' , 59''''' and 67''''') 95.5 per cent. of gray, the last being in reality colored grays. Finally scales are shown (on Plate LIII) of neutral gray (in which all trace of color is wanting), and of carbon gray, a simple mixture of lamp-black and chinese white. It is not easy to find a suitable name for these scales of reduced or "broken" colors, but they may, for present convenience, be termed *reduced or broken scales*.

*Full Color*.—A color corresponding in intensity with its manifestation in the solar spectrum.

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\*The distinctions of color or hue diminishing in proportion to the increased admixture of gray, each alternate color or hue, with its scale (vertical) of tones, is omitted from the third and fourth series; while in the fifth the color differentiation is so greatly reduced that only the six spectrum colors (dulled by admixture of 95.5 per cent. of neutral gray), together with purple (the intermediate between violet and red) are given; a yellow orange hue being substituted for spectrum orange because it is more exactly intermediate in hue between red and yellow.

*Pure Color.*—A color corresponding in purity with (or, in the case of material colors, closely approximating to) one of the spectrum colors.

*Broken Color.*—Any one of the spectrum colors or hues dulled or reduced in purity by admixture (in any proportion) of neutral gray, or varying relative proportions of both black and white; also produced by admixture of certain spectrum colors, as red with green, orange with blue, yellow with violet, etc. These broken colors are far more numerous in Nature than the pure spectrum colors, and include the almost infinite variations of brown, russet, citrine, olive, drab, etc. They are often called dull or neutral colors.

*Fundamental Colors.*—The six psychologically distinct colors of the solar spectrum; Red, Orange, Yellow, Green, Blue and Violet.

*Primary Colors.*—Theoretically, any of the spectrum colors which cannot be made by mixture of two other colors. According to the generally accepted Young-Helmholtz theory, the primary colors are red, green, and violet; orange and yellow resulting from a mixture of red and green, and blue from a mixture of green and violet. There is considerable difference of opinion, however, as to this question, and further investigation of the subject seems to be required; at any rate, authorities fail to explain why red may be exactly reproduced (except as to the degree of luminosity) by a mixture of orange and violet, exactly as yellow results from mixture of red and green or blue from green or violet, green being, in fact, the only spectrum color that cannot be made by mixture of other colors.\*

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\*J. J. Müller found that a mixture of the orange and violet rays of the spectrum produced a whitish red (Rood, "Modern Chromatics," p. 129). The author of the present work, without being at the time aware of this, produced an absolutely pure red (but of reduced intensity) by mixture of either orange and violet (orange 63.5, violet 36.5 per cent.=red 85+white 15 per cent.), or from orange and the violet-red which is complementary to green (violet-red 51, orange 49 per cent.), the latter equaling red 89+white 11 per cent; the mixtures being made on a color wheel with Maxwell disks representing the pure colors of the present work. The red resulting from either of these mixtures on the color-wheel is far purer than the blue resulting from mixture of green and violet, and incomparably more so than the yellow resulting from mixture of either red and green or orange and green. Consequently, if the same results would come from mixing orange and violet light, it is difficult to understand how red can be a primary color according to the accepted definition.

*Chroma*.—Degree of freedom from white light; purity, intensity or fullness of color.

*Luminosity*.—Degree of brightness or clearness. The relative luminosity of the spectrum colors is as follows: [Yellow (brightest)?], orange yellow; orange; greenish-yellow, yellow-green, and green; orange-red; red and blue (equal); violet-blue, blue-violet, violet.\*

*Warm Colors*.—The colors nearer the red end of the spectrum or those of longer wave-lengths (red, orange, and yellow, and connecting hues) "and combinations in which they predominate."†

*Cool, or Cold, Colors*.—The colors nearer the violet end of the spectrum or those of shorter wave-length, especially blue and green-blue. "But it is, perhaps, questionable whether green and violet may be termed either warm or cool."

*Complementary Color*.—"As white light is the sum of all color, if we take from white light a given color the remaining color is the complement of the given color." When any two colors or hues which when combined in proper proportion on the color-wheel produce, by rotation, neutral gray, these two colors each represent the complementary of the other.

*Constants of Color*.—The constants of color are numbers which measure (1) the wave-length, (2) the chroma, and (3) the luminosity.

In addition to the terms defined above there are many others, for which the reader is referred to the chapter on "Color Definitions" on pages 23-30 of Milton Bradley's excellent and most useful book "Elementary Color."

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\*Rood: Modern Chromatics, p. 34.

With the single exception of Vanderpoel (Color Problems, p. 28, plates 3, 4, where yellow is given first in order of luminosity) all authorities on color-physics that I have been able to consult very singularly ignore yellow entirely in their treatment of the subject of luminosity.

†All quotations here are from Milton Bradley's "Elementary Color," except where otherwise noted.

TABLE OF PERCENTAGES OF COMPONENT COLORS IN THE CONNECTING HUES OF THE CHROMATIC SCALE.

The following table shows the relative percentages, in color-wheel measurement, of the two components in each of the hues connecting adjacent pairs of the six spectrum colors as represented on the original Plates of this work; together with an equal number of exact intermediates (not shown on the Plates), the latter in lower-case type and not indicated by symbols.

Num- ber.	Color.	Red.	Orange.	Yellow.	Green.	Blue.	Violet.	Wave- length. <sup>1</sup>
1	<b>Red</b>	<b>100</b>						644
2		90	10					
3	<b>O-R</b>	<b>80</b>	<b>20</b>					
4		70	30					
5	<b>OO-R</b>	<b>60</b>	<b>40</b>					
6		50	50					
7	<b>R-O</b>	<b>40</b>	<b>60</b>					
8		30	70					
9	<b>OR-O</b>	<b>20</b>	<b>80</b>					
10		10	90					
11	<b>Orange</b>		<b>100</b>					598
12			96	4				
13	<b>OY-O</b>		<b>91</b>	<b>9</b>				
14			86	14				
15	<b>Y-O</b>		<b>80</b>	<b>20</b>				
16			73.5	26.5				
17	<b>O-Y</b>		<b>65</b>	<b>35</b>				
18			56.5	43.5				
19	<b>YO-Y</b>		<b>47</b>	<b>53</b>				
20			36.5	63.5				
21	<b>O-YY</b>		<b>25</b>	<b>75</b>				577
22			13.5	86.5				
23	<b>Yellow</b>			<b>100</b>				
24				87	13			
25	<b>YG-Y</b>			<b>75</b>	<b>25</b>			
26				64	36			
27	<b>G-Y</b>			<b>55</b>	<b>45</b>			
28				46	54			
29	<b>GG-Y</b>			<b>39</b>	<b>61</b>			
30				31	69			

<sup>1</sup> As determined by Dr. P. G. Nutting, Associate Physicist, U. S. Bureau of Standards.

## 22 COLOR STANDARDS AND NOMENCLATURE.

TABLE OF PERCENTAGES—Continued.

Number	Color.	Red.	Orange.	Yellow.	Green.	Blue.	Violet.	Wave-length.
31	Y-G	.....	.....	24	76	.....	.....	520
32	.....	.....	.....	17	83	.....	.....	
33	GY-G	.....	.....	11	89	.....	.....	
34	.....	.....	.....	6	94	.....	.....	
35	Green	.....	.....	.....	100	.....	.....	
36	.....	.....	.....	.....	96.5	3.5	.....	
37	GB-G	.....	.....	.....	93	7	.....	
38	.....	.....	.....	.....	90	10	.....	
39	B-G	.....	.....	.....	85	15	.....	
40	.....	.....	.....	.....	81	19	.....	
41	BB-G	.....	.....	.....	75	25	.....	
42	.....	.....	.....	.....	69	31	.....	
43	G-B	.....	.....	.....	61	39	.....	
44	.....	.....	.....	.....	54	46	.....	
45	BG-B	.....	.....	.....	45	55	.....	
46	.....	.....	.....	.....	36	64	.....	
47	G-BB	.....	.....	.....	25	75	.....	473
48	.....	.....	.....	.....	13	87	.....	
49	Blue	.....	.....	.....	.....	100	.....	
50	.....	.....	.....	.....	.....	84	16	
51	BV-B	.....	.....	.....	.....	72	28	
52	.....	.....	.....	.....	.....	64	36	
53	V-B	.....	.....	.....	.....	54	46	
54	.....	.....	.....	.....	.....	47	53	
55	B-V	.....	.....	.....	.....	40	60	
56	.....	.....	.....	.....	.....	32	68	
57	VB-V	.....	.....	.....	.....	22	78	410
58	.....	.....	.....	.....	.....	12	88	
59	Violet	.....	.....	.....	.....	.....	100	
60	.....	3	.....	.....	.....	.....	97	
61	VR-V	7	.....	.....	.....	.....	93	
62	.....	11	.....	.....	.....	.....	89	
63	R-V	18	.....	.....	.....	.....	82	
64	.....	24	.....	.....	.....	.....	76	
65	RR-V	33	.....	.....	.....	.....	67	
66	.....	41	.....	.....	.....	.....	59	
67	V-R	52	.....	.....	.....	.....	48	4.5
68	.....	64	.....	.....	.....	.....	36	
69	RV-R	74	.....	.....	.....	.....	26	
70	.....	83	.....	.....	.....	.....	17	
71	V-RR	90	.....	.....	.....	.....	10	
72	.....	95.5	.....	.....	.....	.....	4.5	

1 As determined by Dr. P. G. Nutting, Associate Physicist, U. S. Bureau of Standards.

TABLE SHOWING PERCENTAGE OF WHITE AND BLACK,  
RESPECTIVELY, IN EACH TONE OF THE  
TONE OR LUMINOSITY SCALES.

All of the vertical scales in the original Plates of this work (the scale of carbon grays alone excepted) contain the following percentages by color-wheel measurement :

TONE.	PERCENTAGES.		
	White.	Color.	Black.
<b>(White)</b>	<b>100</b>		
(g)	70	30	
<b>f</b>	<b>45</b>	<b>55</b>	
(e)	32	68	
<b>d</b>	<b>22.5</b>	<b>77.5</b>	
(c)	15	85	
<b>b</b>	<b>9.5</b>	<b>90.5</b>	
(a)	5	95	
<b>(Full Color)</b>		<b>100</b>	
(h)		64	26
<b>i</b>		<b>55</b>	<b>45</b>
(j)		41	59
<b>k</b>		<b>29.5</b>	<b>70.5</b>
(l)		20	80
<b>m</b>		<b>12.5</b>	<b>87.5</b>
(n)		6	94
<b>(Black)</b>			<b>100</b>

One of the most serious difficulties encountered in the preparation of the Plates of this work was the apparent impracticability of reproducing satisfactory shades of pure colors. This originated in the fact that there seems to be no substance (pigment, dye, or fabric) which represents a true black, all reflecting more or less of white light, and consequently producing shades which are dull

or broken. The difficulty is increased by the additional fact that any black pigment mixed with almost any color falls short of even the color-wheel mixture in purity of hue in the resulting shades, owing to the very considerable amount of gray in all black pigments. Chromolithography can be made to produce clearer and better shades of the pure colors, but is distinctly objectionable for the purpose of a work of this kind owing to eventual oxidation of the oil or varnish with which the pigments are combined in lithographic inks, causing a change of hue; reds becoming more orange, blues more greenish, etc., in course of time.

While the absence (in large part) of pure chromatic shades is much to be regretted, the defect is not so serious, *from the standpoint of utility*, as might appear at first sight; for while saturated or darkened pure colors are not uncommon in the animal, vegetable, and mineral kingdoms, more or less broken dark colors are infinitely more so; and since the latter are greatly increased in number by the defect mentioned the actual result is rather an advantage than otherwise.

It will doubtless be noticed that there is a conspicuous difference in relative darkness between shades of yellow and contiguous hues on the one hand and corresponding ones of violet and adjacent hues on the other, as if the percentage of black in each were very different. This, however, is entirely the result of difference of luminosity of the two sets of colors, that of yellow being between 7000 and 8000 while that of violet is only about 13;\* for the percentage of black in corresponding tones of the vertical scales is precisely the same for each color throughout the chromatic scale of this work.

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\*See Rood, *Modern Chromatics*, pages 34, 35.

TABLE SHOWING PERCENTAGES OF NEUTRAL GRAY  
IN THE BROKEN COLOR SCALES.

Every Plate in each series of broken colors (' to ''''') contains exactly the same percentage of neutral gray in each color, the relative amount increasing progressively in the several series, as shown in the following table. The percentages of white in the tints and of black in the shades of the tone scales are in all cases exactly the same as in the tone scales of pure colors.

SERIES.	PERCENTAGES.	
	Color.	Neutral Gray.
Pure Colors	100	.....
(')	68	32
('')	42	58
('''') ↓	23	77
('''')	10	90
('''''')	4.5	95.5
Neutral Gray	.....	100

TABLE OF PERCENTAGE OF BLACK AND WHITE IN THE  
DIFFERENT TONES OF CARBON GRAY.

TONE NUMBER.	PERCENTAGES.	
	Black.	White.
1	100	.....
2	98	2
3	94.5	5.5
4	89.5	10.5
5	83	17
6	75	25
7	67.5	32.5
8	58.5	41.5
9	47	53
10	30	70

*Note.*—The percentages given in the preceding tables may not in all cases be precisely those actually contained in the colors on the Plates, since absolute precision in reproduction is hardly possible. All that can be claimed is a reasonably close approximation to the ideal.



## 26 COLOR STANDARDS AND NOMENCLATURE.

DYES AND PIGMENTS USED IN THE PREPARATION OF THE  
MAXWELL DISKS, REPRESENTING THE THIRTY-  
SIX COLORS OF THE PURE SPECTRUM SCALE,  
FORMING THE BASIS OF THE COLOR-  
SCHEME OF THIS WORK.\*

**Red.**—Devoe's *geranium lake* (dry), its orange hue neutralized by a wash of *rhodamin b.* (*Crocein scarlet b.* washed with *rhodamin b.* produces practically the same fine red.)

Hues between red and orange.—*Crocein scarlet b.* with *gold orange*.

**Orange.**—*Gold orange* with *orange g.*

Hues between orange and yellow.—*Orange g.* with *auramin*.

**Yellow.**—*Auramin*, rather dilute. (The best substitute among pigments is a fine quality of *zinc yellow*, as Hatfield's.)

Hues between yellow and green.—*Auramin* washed with *light green*.

**Green.**—*Auramin* (very dilute) washed with *light green*. (The auramin should be applied first, because it "sets" or becomes fast quickly, while the light green does not, but is largely removed by overwashes of the yellow, thus rendering it very difficult to get the desired hue.)

Hues between green and blue.—*Methyl green*; the same washed with *light blue* (Diamond Dye); for the hues nearer blue, *light blue* washed with Winsor and Newton's *permanent blue* or *new blue* (the least violet-hued of the artificial ultramarines).

**Blue.**—*Light blue* washed with *permanent blue* or *new blue*. (Although the color is nearer that of the artificial ultramarines named, it is useless to apply the latter first,

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\*The aniline or coal-tar dyes named are all of the manufacture of Dr. G. Grübler and Co., Leipzig, Germany, unless otherwise stated. (See Preface, page ii.)

for overwashes of the light blue merely sink through and darken the color without improving the hue. A moderately saturated solution of the light blue should be applied first, and when this is dry covered with one or more rather thin washes of the permanent blue or new blue).

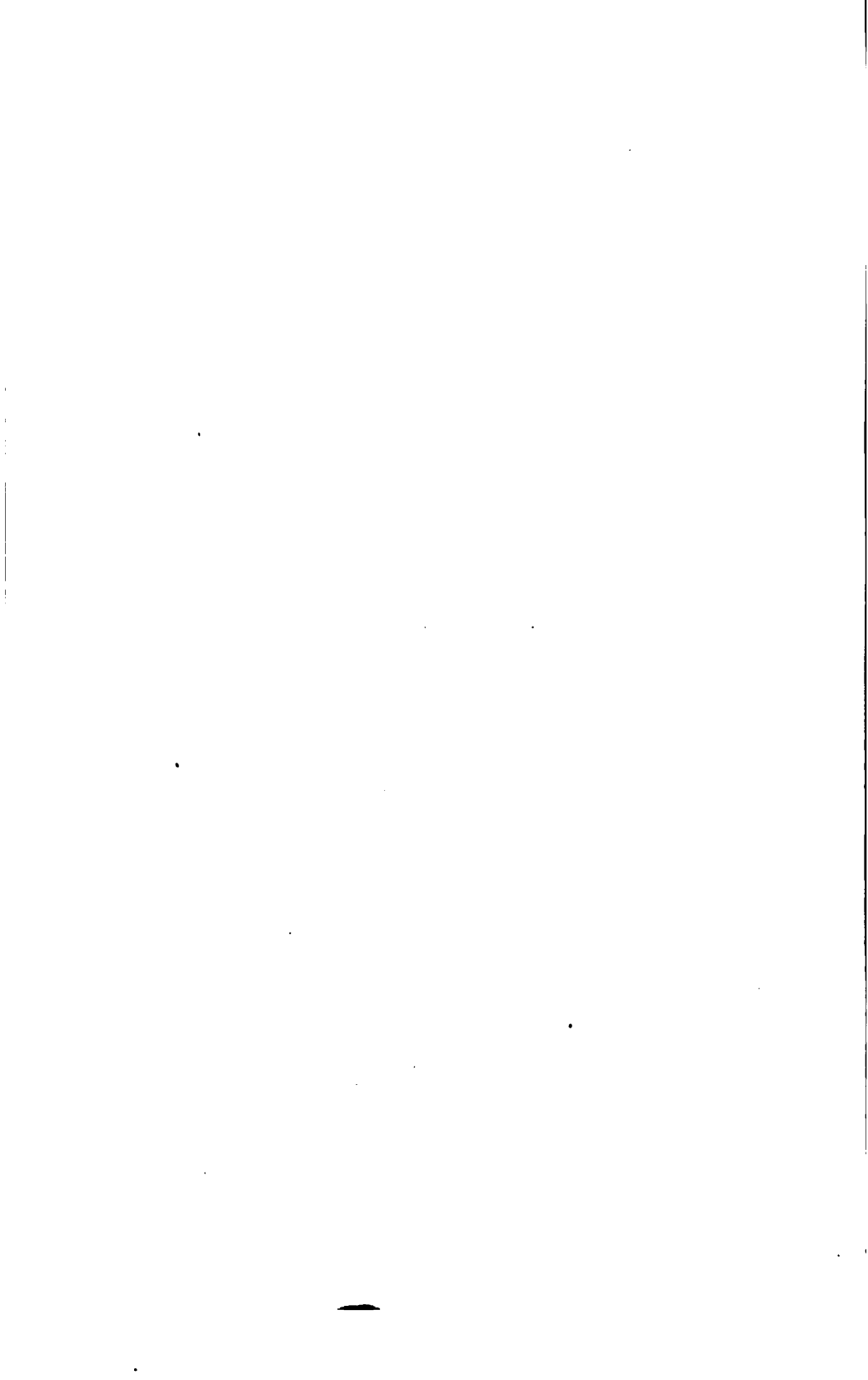
**Hues between blue and violet.**—Winsor and Newton's *permanent blue* and some of the more violet-hued artificial ultramarines, the hues nearer violet washed with *crystal violet* or *gentian violet*.

**Violet.**—*Crystal violet*.

**Hues between violet and red.**—*Methyl violet 1b.* washed with *rhodamin b.*; for hues nearer red, *rhodamin b.* with Devoe's *geranium red* (dry) or *crocein scarlet b.*

While more or less similar in hue to *rhodamin b.*, several other aniline dyes, as *acid fuchsin*, *rubin s.*, *rosein*, *magenta*, etc., do not combine satisfactorily with the violets, the mixture soon becoming dark or dull and none of them are quite as pure a purple or red-violet.

It is most important to remember that disks thus colored must be carefully protected from light when not in actual use and *never* exposed to direct sunlight. The artificial ultramarines are, of course, permanent, and so, practically, are *crocein scarlet*, gold orange, orange g., and *auramin*—that is to say, are not materially affected by the action of light except after very prolonged exposure, though the last named undergoes a change of hue; but the green and violet aniline dyes are all very evanescent, rapidly fading and eventually disappearing; light blue and *rhodamin*, while sensitive to light, are far less so than the greens and violets.



# ALPHABETICAL LIST OF COLORS REPRESENTED ON PLATES OF THIS WORK

COLOR NAME.	Plate.	Color or hue Number.	Tone.	COLOR NAME.	Plate	Color or hue Number.	Tone.
Absinthe Green.....	XXXI	29''	—	Benzo Brown.....	XLVI	13'''	i
Acajou Red.....	XIII	1'	i	Benzol Green.....	VII	41	—
Acetin Blue.....	XXXV	49''	k	*Berlin Blue.....	VIII	47	m
Ackermann's Green.....	XVII	35'	k	Beryl Blue.....	VIII	43	f
Aconite Violet.....	XXXVII	63''	—	*Beryl Green.....	XIX	41'	b
Ageratum Violet.....	XXXVII	63''	b	*Bice Green.....	XVII	29'	k
Alice Blue.....	XXXIV	45''	b	Biscay Green.....	XXXI	27''	i
Alizarine Blue.....	XXI	51'	m	Bishop's Purple.....	XXXVII	65''	—
Alizarine Pink.....	XIII	1'	d	*Bister.....	XXIX	15''	m
Amaranth Pink.....	XII	69	d	Bittersweet Orange.....	II	9	b
Amaranth Purple.....	XII	69	i	Bittersweet Pink.....	II	9	d
Amber Brown.....	III	13	k	*Black.....	LIII	—	(I)
Amber Yellow.....	XVI	21'	b	Blackish Brown (1).....	XLV	1'''	m
American Green.....	XLI	33'''	i	Blackish Brown (2).....	XLV	5'''	m
Amethyst Violet.....	XI	61	—	Blackish Brown (3).....	XLV	9'''	m
Amparo Blue.....	IX	51	b	Blackish Green-Blue.....	VIII	43	m
Amparo Purple.....	XI	63	b	Blackish Green-Gray.....	LII	35'''	m
Andover Green.....	XLVII	25'''	i	Blackish Mouse Gray.....	LI	15'''	m
Aniline Black.....	L	69'''	m	Blackish Plumbeous.....	LII	49'''	k
Aniline Lilac.....	XXXV	53''	d	Blackish Purple.....	XI	65	m
Aniline Yellow.....	IV	19	i	Blackish Red-Purple.....	XII	67	m
Anthracene Green.....	VII	39	m	*Blackish Slate.....	LIII	—	m(3)
Anthracene Purple.....	XLIV	69'''	k	Blackish Violet.....	X	59	m
Anthracene Violet.....	XXV	61'	k	Blackish Violet-Gray.....	LII	59'''	m
Antimony Yellow.....	XV	17'	b	Blanc's Blue.....	XX	47'	k
Antique Brown.....	III	17	k	Blanc's Violet.....	XXIII	59'	k
Antique Green.....	VI	33	m	Blue-Violet.....	X	55	—
*Antwerp Blue.....	VIII	45	k	Blue-Violet Black.....	XLIX	57'''	m
*Apple Green.....	XVII	29'	—	Bluish Black.....	XLIX	49'''	m
*Apricot Buff.....	XIV	11'	b	Bluish Glauous.....	XLII	37'''	f
*Apricot Orange.....	XIV	11'	—	Bluish Gray-Green.....	XLII	41'''	—
Apricot Yellow.....	IV	19	b	Bluish Lavender.....	XXXVI	57''	d
Argus Brown.....	III	13	m	Bluish Slate-Black.....	XLVIII	45'''	m
Argyle Purple.....	XXXVII	65''	b	Bluish Violet.....	X	57	—
Army Brown.....	XL	13'''	i	Bone Brown.....	XL	13'''	m
Artemisia Green.....	XLVII	33'''	—	Bordeaux.....	XII	71	k
Asphodel Green.....	XLI	29''	—	*Bottle Green.....	XIX	37'	m
*Aster Purple.....	XII	67	i	Bradley's Blue.....	IX	51	—
Auburn.....	II	11	m	Bradley's Violet.....	XXIII	59'	—
*Auricula Purple.....	XXVI	69'	k	Brazil Red.....	I	5	i
Avellaneous.....	XL	17'''	b	Bremen Blue.....	XX	43'	b
Azurite Blue.....	IX	53	m	*Brick Red.....	XIII	5'	k
Barium Yellow.....	XVI	23'	d	Bright Chalcidony Yellow..	XVII	25'	—
Baryta Yellow.....	IV	21	f	Bright Green-Yellow.....	V	9	—
*Bay.....	II	7	m	Brownish Drab.....	XLV	9'''	—
Begonia Rose.....	I	1	b	Brownish Olive.....	XXX	19''	m

COLOR NAME.	Plate.	Color or hue Number.	Tone.	COLOR NAME.	Plate	Color or hue Number.	Tone.
Brownish Vinaceous.....	XXXIX	5'''	<i>b</i>	*China Blue.....	XX	45'	<i>i</i>
Brussels Brown.....	III	15	<i>m</i>	Chinese Violet.....	XXV	65'	<i>b</i>
Buckthorn Brown.....	XV	17'	<i>i</i>	*Chocolate.....	XXVIII	7'''	<i>m</i>
*Buff-Pink.....	XXVIII	11'''	<i>d</i>	*Chromium Green.....	XXXII	31'''	<i>i</i>
Buffy Brown.....	XL	17'''	<i>i</i>	Chrysolite Green.....	XXXI	27'''	<i>b</i>
Buffy Citrine.....	XVI	19'	<i>k</i>	Chrysoprase Green.....	VII	37	<i>b</i>
Buffy Olive.....	XXX	21'''	<i>k</i>	*Cinereous.....	LII	45'''''	<i>d</i>
*Buff-Yellow.....	IV	21	<i>d</i>	*Cinnamon.....	XXXI	15'''	—
Burn Blue.....	XXXIV	47'''	<i>f</i>	Cinnamon-Brown.....	XV	15'	<i>k</i>
Burnt Lake.....	XII	71	<i>m</i>	Cinnamon-Drab.....	XXIX	15'''	<i>d</i>
*Burnt Sienna.....	II	9	<i>k</i>	Cinnamon-Drab.....	XLVI	13'''''	—
*Burnt Umber.....	XXVIII	9'''	<i>m</i>	*Cinnamon-Rufous.....	XIV	11'	<i>i</i>
Cacao Brown.....	XXVIII	9'''	<i>i</i>	Citrine.....	IV	21	<i>k</i>
Cadet Blue.....	XXI	49'	<i>i</i>	Citrine-Drab.....	XL	19'''	<i>i</i>
Cadet Gray.....	XLII	45'''	<i>b</i>	Citron Green.....	XXXI	25'''	<i>b</i>
*Cadmium Orange.....	III	13	—	*Citron Yellow.....	XVI	23'	<i>b</i>
*Cadmium Yellow.....	III	17	—	Civette Green.....	XXVIII	31'	<i>k</i>
Calamine Blue.....	VIII	43	<i>d</i>	*Claret Brown.....	I	5	<i>m</i>
Calla Green.....	V	25	<i>m</i>	*Clay Color.....	XXIX	17'''	—
Calliste Green.....	VI	31	<i>i</i>	Clear Cadet Blue.....	XXI	49'	—
Cameo Brown.....	XXVIII	7'''	<i>k</i>	Clear Dull Green Yellow...	XVII	25'	<i>b</i>
Cameo Pink.....	XXVI	71'	<i>f</i>	Clear Fluorite Green.....	XXXII	33'''	<i>b</i>
*Campanula Blue.....	XXIV	57	<i>b</i>	Clear Blue-Green Gray.....	XLVIII	45'''''	<i>d</i>
Capri Blue.....	XX	43'	<i>i</i>	Clear Payne's Gray.....	XLIX	49'''''	<i>b</i>
Capucine Buff.....	III	13	<i>f</i>	Clear Windsor Blue.....	XXXV	49'''	—
Capucine Orange.....	III	13	<i>d</i>	Clear Yellow-Green.....	VI	31	<i>b</i>
Capucine Yellow.....	III	15	<i>b</i>	*Clove Brown.....	XL	17'''	<i>m</i>
*Carmine.....	I	1	<i>i</i>	Cobalt Green.....	XIX	37'	<i>b</i>
Carnelian Red.....	XIV	7'	—	Colonial Buff.....	XXX	21'''	<i>d</i>
Carob Brown.....	XIV	9'	<i>m</i>	Columbia Blue.....	XXXIV	47'''	<i>b</i>
Carrot Red.....	XIV	7'	<i>b</i>	Commelina Blue.....	XXI	51'	—
Cartridge Buff.....	XXX	19'''	<i>f</i>	Congo Pink.....	XXVIII	7'''	<i>b</i>
Castor Gray.....	LII	35'''''	<i>i</i>	Coral Pink.....	XIII	5'	<i>d</i>
Cedar Green.....	VI	31	<i>m</i>	*Coral Red.....	XIII	5'	—
Celandine Green.....	XLVII	33'''''	<i>b</i>	Corinthian Pink.....	XXVII	3'''	<i>d</i>
Cendre Blue.....	VIII	43	<i>b</i>	Corinthian Purple.....	XXXVIII	69'''	<i>k</i>
Cendre Green.....	VI	35	<i>b</i>	Corinthian Red.....	XXVII	3'''	—
Cerro Green.....	V	27	<i>m</i>	Cornflower Blue.....	XXI	53'	—
*Cerulean Blue.....	VIII	45	—	Corydalis Green.....	XLI	29'''	<i>d</i>
Chaetura Black.....	XLVI	17'''''	<i>m</i>	Cossack Green.....	VI	33	<i>m</i>
Chaetura Drab.....	XLVI	17'''''	<i>k</i>	Cosse Green.....	V	29	<i>i</i>
Chalcedony Yellow.....	XVII	25'	—	Cotinga Purple.....	XI	63	<i>k</i>
Chamois.....	XXX	19'''	<i>b</i>	Courge Green.....	XVII	25'''	<i>i</i>
Chapman's Blue.....	XXII	49*	<i>i</i>	Court Gray.....	XLVII	29'''''	<i>f</i>
Chartreuse Yellow.....	XXXI	25'''	<i>d</i>	*Cream-Drab.....	XXX	19'''	<i>d</i>
Chatenay Pink.....	XIII	3'	<i>f</i>	*Cream Color.....	XVI	19'	<i>f</i>
Chessylite Blue.....	XX	45'	<i>k</i>	Cress Green.....	XXXI	29'''	<i>k</i>
*Chestnut.....	II	9	<i>m</i>	*Cyanine Blue.....	IX	51	<i>m</i>
Chestnut-Brown.....	XIV	11'	<i>m</i>	Dahlia Carmine.....	XXVI	71'	<i>k</i>
Chicory Blue.....	XXIV	59*	<i>d</i>	*Dahlia Purple.....	XII	67	<i>k</i>

COLOR NAME.	Plate.	Color or hue Number.	Tone.	COLOR NAME.	Plate	Color or hue Number.	Tone.
Danube Green.....	XXXII	35"	m	Dark Mouse Gray.....	LI.	15""	k
Daphne Pink.....	XXXVIII	69"	b	Dark Naphthalene Violet..	XXXVII	61"	m
Daphne Red.....	XXXVIII	69"	—	Dark Neutral Gray.....	LIII	—	k
Dark American Green.....	XLI	29""	k	Dark Nigrosin Violet.....	XXV	65"	m
Dark Aniline Blue.....	X	55	m	Dark Olive.....	XL	21""	m
Dark Anthracene Violet....	XXV	61'	m	Dark Olive-Buff.....	XL	21""	—
Dark Bluish Glauous.....	XLII	37""	b	Dark Olive-Gray.....	LI	23""	i
Dark Bluish Gray-Green....	XLII	41""	k	Dark Orient Blue.....	XXXIV	45"	k
Dark Bluish Violet.....	X	57	m	Dark Payne's Gray.....	XLIX	49""	k
Dark Cadet Blue.....	XXI	49'	m	Dark Perilla Purple.....	XXXVII	65"	m
Dark Chessylite Blue.....	XX	45'	m	Dark Plumbago Blue.....	XLIII	53""	b
Dark Cinnabar Green.....	XIX	39'	k	Dark Plumbago Gray.....	L	61""	—
Dark Citrine.....	IV	21	m	Dark Plumbago Slate.....	L	61""	k
Dark Corinthian Purple....	XXXIX	69"	m	Dark Plumbeous.....	LII	49""	i
Dark Cress Green.....	XXXI	29"	m	Dark Porcelain Green.....	XXXIII	39"	k
Dark Delft Blue.....	XLII	45""	m	Dark Purple-Drab.....	XLV	1""	i
Dark Diva Blue.....	XXI	51	k	Dark Purplish Gray.....	LIII	67""	k
Dark Dull Blue-Violet.....	XXXVI	55"	k	Dark Quaker Drab.....	LI	1""	k
Dark Dull Bluish Violet (1).	XXIV	57*	k	Dark Russian Green.....	XLII	37""	k
Dark Dull Bluish Violet (2).	XXXV	51"	k	Dark Slate-Purple.....	XLIV	65""	k
Dark Dull Bluish Violet (3).	XXXVI	57"	k	Dark Slate-Violet (1).....	XLIII	57""	k
Dark Dull Violet-Blue.....	XXIV	53*	k	Dark Slate-Violet (2).....	XLIV	61""	k
Dark Dull Yellow-Green....	XXXII	31"	m	Dark Soft Blue-Violet.....	XXIII	55'	k
Dark Glauous-Gray.....	XLVIII	37""	b	Dark Soft Bluish Violet...	XXIII	57'	k
Dark Gobelin Blue.....	XXXIV	43"	k	Dark Sulphate Green.....	XIX	39'	i
Dark Grayish Blue-Green..	XLVIII	37""	k	Dark Terre Verte.....	XXXIII	41"	k
Dark Grayish Blue-Violet..	XXIV	55*	k	Dark Tyrian Blue.....	XXXIV	47"	k
Dark Grayish Brown.....	XLV	5""	k	Dark Varley's Gray.....	XLIX	57""	k
Dark Grayish Lavender....	XLIII	57""	b	Dark Vinaceous.....	XXVII	1"	—
Dark Grayish Olive.....	XLVI	21""	k	Dark Vinaceous-Brown.....	XXXIX	5""	k
Dark Green.....	XVIII	35'	m	Dark Vinaceous-Drab.....	XLV	5""	i
Dark Green-Blue Gray.....	XLVIII	45""	—	Dark Vinaceous-Gray.....	L	69""	—
Dark Green-Blue Slate....	XLVIII	45""	k	Dark Vinaceous-Purple....	XXXVIII	67"	k
Dark Greenish Glauous....	XLI	29""	b	Dark Violet.....	X	59	k
Dark Greenish Olive.....	XXX	23"	m	Dark Violet-Gray.....	LII	59""	k
Dark Gull Gray.....	LIII	—	(6)	Dark Violet-Slate.....	XLIX	53""	k
Dark Heliotrope Gray.....	L	65""	—	Dark Viridian Green.....	VII	37	k
Dark Heliotrope Slate.....	L	65""	k	Dark Yellowish Green.....	XVIII	33'	m
Dark Hyssop Violet.....	XXXVI	59"	k	Dark Yvette Violet.....	XXXVI	55"	m
Dark Indian Red.....	XXVII	3"	m	Dark Zinc Green.....	XIX	37'	k
Dark Ivy Green.....	XLVI	25""	k	Dauphin's Violet.....	XXIII	59'	i
Dark Lavender.....	XLIV	61""	b	Dawn Gray.....	LII	35""	d
Dark Livid Brown.....	XXXIX	1""	k	Deep Aniline Lilac.....	XXXV	53"	h
Dark Livid Purple.....	XXXVII	63"	m	Deep Blue-Violet.....	X	55	i
Dark Livid Red.....	XXXIX	1"	k	Deep Bluish Glauous.....	XLII	37""	d
Dark Madder Blue.....	XLIII	53""	k	Deep Bluish Gray-Green...	XLII	41""	i
Dark Madder Violet.....	XXV	63"	m	Deep Brownish Drab.....	XLV	9""	i
Dark Maroon Purple.....	XXVI	71"	m	Deep Brownish Vinaceous.	XXXIX	5""	—
Dark Medici Blue.....	XLVIII	41""	i	Deep Cadet Blue.....	XXI	49'	k
Dark Mineral Red.....	XXVII	1"	m	Deep Chicory Blue.....	XXIV	57*	b

COLOR NAME.	Plate.	Color or hue Number.	Tone.	COLOR NAME.	Plate	Color or hue Number.	Tone.
*Deep Chrome.....	III	17	<i>b</i>	Deep Slate-Green.....	XLVII	33''''	<i>k</i>
Deep Chrysolite Green.....	XXXI	27''	—	Deep Slate-Olive.....	XLVI	29''''	<i>k</i>
Deep Colonial Buff.....	XXX	21''	<i>b</i>	Deep Slate-Violet.....	XLIV	61''''	<i>k</i>
Deep Corinthian Red.....	XXVII	3''	<i>i</i>	Deep Slaty Brown.....	L	69''''	<i>k</i>
Deep Delft Blue.....	XLII	45''	<i>k</i>	Deep Soft Blue-Violet.....	XXIII	55'	<i>i</i>
Deep Dull Bluish Violet (1).....	XXIV	57*	<i>i</i>	Deep Soft Bluish Violet.....	XXIII	57'	<i>i</i>
Deep Dull Bluish Violet (2).....	XXXV	51''	<i>i</i>	Deep Turtle Green.....	XXXII	31''	—
Deep Dull Bluish Violet (3).....	XXXVI	57''	<i>i</i>	Deep Varley's Gray.....	XLIX	57''''	<i>i</i>
Deep Dull Lavender.....	XLIV	61''''	<i>d</i>	Deep Vinaceous.....	XXVII	1''	<i>b</i>
Deep Dull Violaceous Blue.....	XXII	51*	<i>k</i>	Deep Vinaceous-Gray.....	L	69''''	<i>b</i>
Deep Dull Violet-Blue.....	XXXV	53''	<i>i</i>	Deep Vinaceous-Lavender.....	XLIV	65''''	<i>d</i>
Deep Dull Yellow-Green (1).....	XXXII	31''	<i>k</i>	Deep Violet-Gray.....	LII	59''''	<i>i</i>
Deep Dull Yellow-Green (2).....	XXXII	33''	<i>k</i>	Deep Violet-Plumbeous.....	XLIX	53''''	—
Deep Dutch Blue.....	XLIII	49''	—	Deep Wedgewood Blue.....	XXI	51'	<i>d</i>
Deep Glaucous-Gray.....	XLVIII	37''''	<i>d</i>	Delft Blue.....	XLII	45''	<i>i</i>
Deep Glaucous-Green.....	XXXII	39''	<i>b</i>	Diamin-Azo Blue.....	XXXV	51''	<i>m</i>
Deep Grape Green.....	XLI	25''	<i>i</i>	Diamine Brown.....	XIII	3'	<i>m</i>
Deep Grayish Blue-Green.....	XLVIII	37''''	<i>i</i>	Diamine Green.....	VII	37	<i>m</i>
Deep Grayish Lavender.....	XLIII	57''	<i>d</i>	Diva Blue.....	XXI	51'	<i>i</i>
Deep Grayish Olive.....	XLVI	21''''	<i>i</i>	*Drab.....	XLVI	17''''	—
Deep Green-Blue Gray.....	XLVIII	45''''	<i>b</i>	*Drab-Gray.....	XLVI	17''''	<i>d</i>
Deep Greenish Glaucous.....	XLI	29''	<i>d</i>	*Dragons-blood Red.....	XIII	5'	<i>i</i>
Deep Gull Gray.....	LIII	—	<i>b</i> (7)	Dresden Brown.....	XV	17'	<i>k</i>
Deep Heliotrope Gray.....	L	65''''	<i>b</i>	Duck Green.....	XIX	39'	<i>m</i>
Deep Hellebore Red.....	XXXVIII	71''	<i>i</i>	Dull Blackish Green.....	XLI	29''	<i>m</i>
Deep Hyssop Violet.....	XXXVI	59''	<i>i</i>	Dull Blue-Green Black.....	XLVIII	41''''	<i>m</i>
Deep Lavender.....	XXXVI	59''	<i>d</i>	Dull Blue-Violet (1).....	XXIV	55*	—
Deep Lavender-Blue.....	XXI	53'	<i>b</i>	Dull Blue-Violet (2).....	XXXVI	55''	<i>i</i>
Deep Lichen Green.....	XXXIII	37''	<i>d</i>	Dull Bluish Violet (1).....	XXIV	57*	—
Deep Livid Brown.....	XXXIX	1''	<i>i</i>	Dull Bluish Violet (2).....	XXXV	51''	—
Deep Livid Purple.....	XXXVII	63''	<i>k</i>	Dull Bluish Violet (3).....	XXXVI	57''	—
Deep Madder Blue.....	XLII	53''	<i>i</i>	Dull Citrine.....	XVI	21'	<i>k</i>
Deep Malachite Green.....	XXXII	35''	—	Dull Dark Purple.....	XXVI	67'	<i>k</i>
Deep Medici Blue.....	XLVIII	41''''	—	Dull Dusky Purple.....	XXVI	67'	<i>m</i>
Deep Mouse Gray.....	LI	15''''	<i>i</i>	Dull Greenish Black (1).....	XLVII	29''''	<i>m</i>
Deep Neutral Gray.....	LIII	—	<i>i</i>	Dull Greenish Black (2).....	XLVII	33''''	<i>m</i>
Deep Olive.....	XL	21''	<i>k</i>	Dull Green-Yellow.....	XVII	27'	—
Deep Olive-Buff.....	XL	21''	<i>b</i>	Dull Indian Purple.....	XLIV	69''	<i>i</i>
Deep Olive-Gray.....	LI	23''''	—	Dull Lavender.....	XLIV	61''	<i>f</i>
Deep Orient Blue.....	XXXIV	45''	<i>i</i>	Dull Magenta Purple.....	XXVI	67'	<i>i</i>
Deep Payne's Gray.....	XLIX	49''''	<i>i</i>	Dull Opaline Green.....	XIX	37'	<i>f</i>
Deep Plumbago Blue.....	XLIII	53''	<i>d</i>	Dull Purplish Black.....	L	65''''	<i>m</i>
Deep Plumbago Gray.....	L	61''	<i>b</i>	Dull Slate-Violet.....	XLIII	57''	<i>i</i>
Deep Plumbeous.....	LII	49''''	—	Dull Violet-Black (1).....	XLIV	61''	<i>m</i>
Deep Purplish Gray.....	LIII	67''''	<i>i</i>	Dull Violet-Black (2).....	XLIX	53''''	<i>m</i>
Deep Purplish Vinaceous.....	XLIV	69''	—	Dull Violet-Black (3).....	L	61''''	<i>m</i>
Deep Quaker Drab.....	LI	1''''	<i>i</i>	Dull Violaceous Blue.....	XXII	51*	—
Deep Rose-Pink.....	XII	71	<i>d</i>	Dull Violet-Blue.....	XXXV	53''	—
Deep Seafoam Green.....	XXXI	27''	<i>d</i>	Dusky Auricula Purple.....	XXVI	69'	<i>m</i>
Deep Slate-Blue.....	XLIII	49''	<i>k</i>	Dusky Blue.....	XXII	49*	<i>m</i>

COLOR NAME.	Plate.	Color or hue Number.	Tone.	COLOR NAME.	Plate	Color or hue Number.	Tone.
Dusky Blue-Green.....	XXXIII	39"	<i>m</i>	Fluorite Violet.....	XI	61	<i>m</i>
Dusky Bluish Green.....	XXXIII	41"	<i>m</i>	Forest Green.....	XVII	29'	<i>m</i>
Dusky Blue-Violet (1).....	XXIII	57'	<i>m</i>	Forget-me-not Blue.....	XXII	51*	<i>b</i>
Dusky Blue-Violet (2).....	XXIV	55*	<i>m</i>	*French Gray.....	LII	49""	<i>f</i>
Dusky Brown.....	XLV	1""	<i>k</i>	*French Green.....	XXXII	35"	<i>i</i>
Dusky Drab.....	XLV	9""	<i>k</i>	Fuscous.....	XLVI	13""	<i>k</i>
Dusky Dull Bluish Green.....	XLII	41""	<i>m</i>	Fuscous-Black.....	XLVI	13""	<i>m</i>
Dusky Dull Green.....	XLII	37""	<i>m</i>	Garnet Brown.....	I	3	<i>k</i>
Dusky Dull Violet (1).....	XXXVI	57"	<i>m</i>	Gendarme Blue.....	XXII	47*	<i>k</i>
Dusky Dull Violet (2).....	XXXVI	59"	<i>m</i>	Gentian Blue.....	XXI	53'	<i>i</i>
Dusky Dull Violet-Blue.....	XXXV	53"	<i>m</i>	*Geranium Pink.....	I	3	<i>d</i>
Dusky Green.....	XXXIII	37"	<i>m</i>	Glass Green.....	XXXI	29"	<i>d</i>
Dusky Green-Blue (1).....	XX	43'	<i>m</i>	Glaucous.....	XLI	29""	<i>f</i>
Dusky Green-Blue (2).....	XXXIV	43"	<i>m</i>	*Glaucous-Blue.....	XXII	43"	<i>b</i>
Dusky Green-Gray.....	LII	35""	<i>k</i>	Glaucous-Gray.....	XLVIII	37""	<i>f</i>
Dusky Greenish Blue.....	XX	47'	<i>m</i>	*Glaucous-Green.....	XXXIII	39"	<i>d</i>
Dusky Neutral Gray.....	LIII	—	<i>m</i>	Gnaphalium Green.....	XLVII	29""	<i>d</i>
Dusky Olive-Green.....	XLI	25""	<i>m</i>	Gobelin Blue.....	XXXIV	43"	<i>i</i>
Dusky Orient Blue.....	XXXIV	45"	<i>m</i>	Grape Green.....	XLI	25""	—
Dusky Purplish Gray.....	LIII	67""	<i>m</i>	*Grass Green.....	VI	33	<i>k</i>
Dusky Slate-Blue.....	XLIII	49""	<i>m</i>	Grayish Blue-Green.....	XLVIII	37""	—
Dusky Slate-Violet.....	XLIII	57""	<i>m</i>	Grayish Blue-Violet (1).....	XXIV	55*	<i>i</i>
Dusky Violet.....	XXIII	59'	<i>m</i>	Grayish Blue-Violet (2).....	XXXV	51"	<i>b</i>
Dusky Violet-Blue (1).....	XXIII	55'	<i>m</i>	Grayish Lavender.....	XLIII	57""	<i>f</i>
Dusky Violet-Blue (2).....	XLIII	53""	<i>m</i>	Grayish Olive.....	XLVI	21""	—
Dusky Yellowish Green.....	XLI	27""	<i>m</i>	Grayish Violaceous Blue.....	XXII	51*	<i>i</i>
Dutch Blue.....	XLIII	49""	<i>b</i>	Grayish Violet-Blue.....	XXIV	53*	<i>i</i>
*Ecu-Drab.....	XLVI	13""	<i>d</i>	Green-Blue Slate.....	XLVIII	45""	<i>i</i>
Ecu-Olive.....	XXX	21"	<i>i</i>	Green-Yellow.....	V	27	<i>b</i>
Elm Green.....	XVII	27'	<i>m</i>	Greenish Glaucous.....	XLI	33""	<i>f</i>
*Emerald Green.....	VI	35	—	Greenish Glaucous-Blue.....	XLII	41""	<i>b</i>
Empire Green.....	XXXII	33"	<i>m</i>	Greenish Slate-Black.....	XLVIII	37""	<i>m</i>
Empire Yellow.....	IV	21	<i>b</i>	Greenish Yellow.....	V	25	—
Endive Blue.....	XLIII	49""	<i>d</i>	Grenadine.....	II	7	<i>b</i>
English Red.....	II	7	<i>i</i>	Grenadine Pink.....	II	7	<i>d</i>
Eosine Pink.....	I	1	<i>d</i>	Grenadine Red.....	II	7	—
Etain Blue.....	XX	43'	<i>f</i>	Guinea Green.....	VII	39	<i>i</i>
Ethyl Green.....	VII	41	<i>i</i>	Gull Gray.....	LIII	—	<i>d</i> (8)
Eton Blue.....	XXII	49*	<i>k</i>	Haematite Red.....	XXVII	5"	<i>m</i>
Etruscan Red.....	XXVII	5'	—	Haematoxylin Violet.....	XXV	61'	<i>i</i>
Eugenia Red.....	XIII	1'	—	*Hair Brown.....	XLVI	17""	<i>i</i>
Eupatorium Purple.....	XXXVIII	67"	—	Hathi Gray.....	LII	35""	<i>b</i>
*Fawn Color.....	XL	13""	—	Hay's Blue.....	IX	53	<i>k</i>
*Ferruginous.....	XIV	9'	<i>i</i>	Hay's Brown.....	XXXIX	9""	<i>k</i>
*Flame Scarlet.....	II	9	—	Hay's Green.....	XVIII	33'	<i>k</i>
*Flax-flower Blue.....	XXI	51'	<i>b</i>	Hay's Lilac.....	XXXVII	63"	<i>d</i>
*Flesh Color.....	XIV	7'	<i>d</i>	Hay's Maroon.....	XIII	1'	<i>m</i>
Flesh Ocher.....	XIV	9'	<i>b</i>	Hay's Russet.....	XIV	7'	<i>k</i>
Flesh Pink.....	XIII	5'	<i>f</i>	*Hazel.....	XIV	11'	<i>k</i>
Fluorite Green.....	XXXII	33"	—	Heliotrope-Gray.....	L	65""	<i>d</i>



COLOR NAME.	Plate.	Color or hue Number.	Tone.	COLOR NAME.	Plate	Color or hue Number.	Tone.
Heliotrope-Slate .....	L	65''''	<i>i</i>	Light Alice Blue.....	XXXIV	45''	<i>d</i>
Hellebore Green.....	XVII	25'	<i>m</i>	Light Amparo Blue .....	IX	51	<i>d</i>
Hellebore Red.....	XXXVIII	71''	—	Light Amparo Purple.....	XI	63	<i>d</i>
Helvetia Blue.....	IX	51	<i>k</i>	Light Bice Green.....	XVII	29'	<i>i</i>
Hermosa Pink.....	I	1	<i>f</i>	Light Blue-Green.....	VII	39	<i>d</i>
Hessian Brown.....	XIII	5'	<i>m</i>	Light Blue-Violet.....	X	55	<i>b</i>
Honey Yellow.....	XXX	19''	—	Light Bluish Violet.....	X	57	<i>b</i>
Hortense Blue.....	XXII	47*	<i>m</i>	Light Brownish Drab.....	XLV	9''''	<i>b</i>
Hortense Violet.....	XI	61	<i>b</i>	Light Brownish Olive.....	XXX	19''	<i>k</i>
*Hyacinth Blue.....	X	55	<i>k</i>	Light Brownish Vinaceous..	XXXIX	5''''	<i>d</i>
Hyacinth Violet.....	XI	61	<i>i</i>	Light Buff.....	XV	17'	<i>f</i>
Hydrangea Pink.....	XXVII	5''	<i>f</i>	Light Cadet Blue.....	XXI	49'	<i>b</i>
Hydrangea Red.....	XXVII	1''	<i>i</i>	Light Cadmium.....	IV	19	—
Hyssop Violet.....	XXXVI	59''	—	Light Campanula Blue.....	XXIV	55*	<i>d</i>
Indian Lake.....	XXVI	71'	<i>i</i>	Light Celandine Green.....	XLVII	33''''	<i>d</i>
*Indian Purple.....	XXXVIII	67''	<i>m</i>	Light Cendre Green.....	VI	35	<i>d</i>
Indian Red.....	XXVII	3''	<i>k</i>	Light Cerulean Blue.....	VIII	45	<i>b</i>
*Indigo Blue.....	XXXIV	47''	<i>m</i>	Light Chalcedony Yellow...	XVII	25'	<i>d</i>
Indulin Blue.....	XXII	51*	<i>m</i>	Light Chicory Blue.....	XXIV	57*	<i>f</i>
Invisible Green.....	XIX	41'	<i>m</i>	Light Cinnamon-Drab.....	XLVI	13''''	<i>b</i>
Iron Gray.....	LI	23''''	<i>k</i>	Light Columbia Blue.....	XXXIV	47''	<i>d</i>
*Isabella Color.....	XXX	19''	<i>i</i>	Light Congo Pink.....	XXVIII	7''	<i>d</i>
Italian Blue.....	VIII	43	—	Light Coral Red.....	XIII	5'	<i>b</i>
Ivory Yellow.....	XXX	21''	<i>f</i>	Light Corinthian Red.....	XXVII	3''	<i>b</i>
Ivy Green.....	XXXI	25''	<i>m</i>	Light Cress Green.....	XXXI	29''	<i>i</i>
Jade Green.....	XXXI	27''	<i>k</i>	Light Danube Green.....	XXXII	35''	<i>k</i>
Japan Rose.....	XXVIII	9''	<i>b</i>	Light Drab.....	XLVI	17''''	<i>b</i>
Jasper Green.....	XXXIII	37''	<i>i</i>	Light Dull Bluish Violet...	XXXVI	57''	<i>b</i>
Jasper Pink.....	XIII	3'	<i>d</i>	Light Dull Green-Yellow...	XVII	27'	<i>d</i>
Jasper Red.....	XIII	3'	—	Light Elm Green.....	XVII	27'	<i>i</i>
Javel Green.....	V	27	<i>i</i>	Light Fluorite Green.....	XXXII	33''	<i>d</i>
Jay Blue.....	XXII	47*	<i>i</i>	Light Forget-me-not Blue..	XXII	51*	<i>d</i>
Jovence Blue.....	XX	43'	<i>k</i>	Light Glaucous-Blue.....	XXXIV	43''	<i>d</i>
Kaiser Brown.....	XIV	9'	<i>k</i>	Light Dull Glaucous-Blue..	XLII	41''	<i>d</i>
Kildare Green.....	XXXI	29''	<i>b</i>	Light Grape Green.....	XLI	25''''	<i>b</i>
Killarney Green.....	XVIII	35'	<i>i</i>	Light Grayish Blue-Violet..	XXXV	51''	<i>d</i>
King's Blue.....	XXII	47*	<i>b</i>	Light Grayish Olive.....	XLVI	21''''	<i>b</i>
Kronberg's Green.....	XXXI	25''	<i>k</i>	Light Grayish Vinaceous...	XXXIX	9''	<i>d</i>
Laelia Pink.....	XXXVIII	67''	<i>d</i>	Light Grayish Violet-Blue..	XXIV	53*	<i>b</i>
La France Pink.....	I	3	<i>f</i>	Light Greenish Yellow.....	V	25	<i>b</i>
*Lavender.....	XXXVI	59''	<i>f</i>	Light Green-Yellow.....	V	27	<i>d</i>
Lavender-Blue.....	XXI	53'	<i>d</i>	Light Gull Gray.....	LIII	<i>f</i> (9)	
*Lavender-Gray.....	XLIII	49''	<i>f</i>	Light Heliotrope-Gray.....	L	65''''	<i>f</i>
Lavender-Violet.....	XXV	61'	<i>b</i>	Light Hellebore Green.....	XVII	25''	<i>k</i>
Leaf Green.....	XLI	29''	<i>k</i>	Light Hortense Violet.....	XI	61	<i>d</i>
Leitch's Blue.....	VIII	47	<i>i</i>	Light Hyssop Violet.....	XXXVI	59''	<i>b</i>
Lemon Chrome.....	IV	21	—	Light Jasper Red.....	XIII	3'	<i>b</i>
*Lemon Yellow.....	IV	23	—	Light King's Blue.....	XXII	47*	<i>d</i>
Lettuce Green.....	V	29	<i>k</i>	Light Lavender-Blue.....	XXI	53'	<i>f</i>
Lichen Green.....	XXXIII	37''	<i>f</i>	Light Lavender-Violet.....	XXV	61'	<i>d</i>

## ALPHABETICAL LIST OF COLORS.

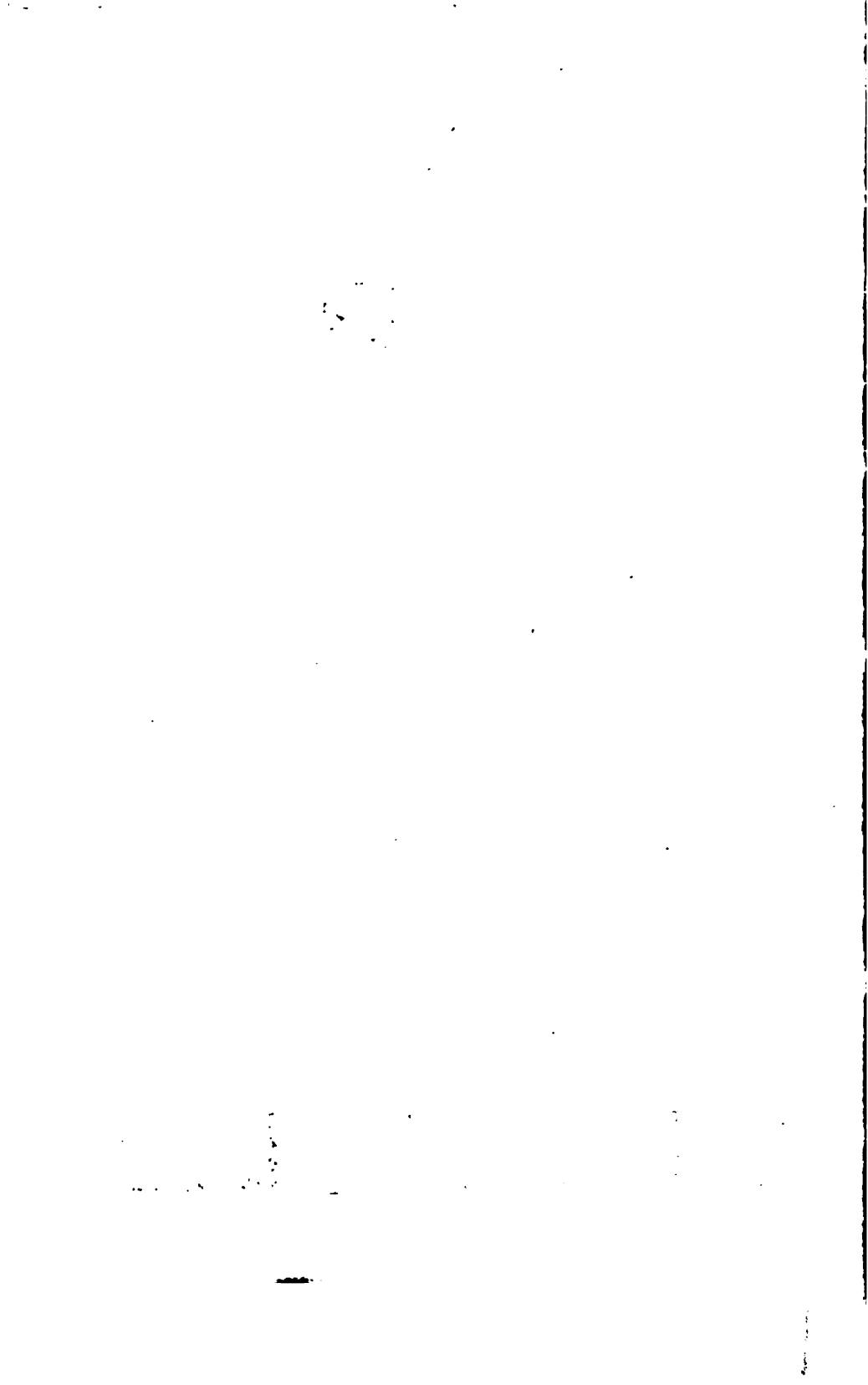
35

COLOR NAME.	Plate.	Color or hue Number.	Tone.	COLOR NAME.	Plate	Color or hue Number.	Tone.
Light Lobelia Violet.....	XXXVII	61''	d	Light Viridine Green.....	VI	33	f
Light Lumiere Green.....	XVII	29'	d	Light Viridine Yellow.....	V	29	d
Light Mallow Purple.....	XII	67	d	Light Windsor Blue.....	XXXV	49''	b
Light Mauve.....	XXV	63'	d	Light Wistaria Blue.....	XXIII	57'	d
Light Medici Blue.....	XLVIII	41''''	d	Light Wistaria Violet.....	XXIII	59'	d
Light Methyl Blue.....	VIII	47	b	Light Yellow-Green.....	VI	31	d
Light Mineral Gray.....	XLVII	25''''	f	Light Yellowish Olive.....	XXX	23''	i
Light Mouse Gray.....	LI	15''''	b	*Lilac.....	XXV	65'	d
Light Neropalin Blue.....	XXII	49*	d	*Lilac-Gray.....	LII	59''''	f
Light Neutral Gray.....	LIII	—	b	Lily Green.....	XLVII	33''''	i
Light Niagara Green.....	XXXIII	41''	d	Lime Green.....	XXXI	25''	—
Light Ochraceous-Buff.....	XV	15'	d	Lincoln Green.....	XLI	25''	k
Light Ochraceous-Salmon..	XV	13'	d	Liseran Purple.....	XXVI	67'	b
Light Olive-Gray.....	LI	23''''	d	Litho. Purple.....	XXV	63'	i
Light Orange-Yellow.....	III	17	d	*Liver Brown.....	XIV	7'	m
Light Oriental Green.....	XVIII	33'	b	Livid Brown.....	XXXIX	1''	—
Light Paris Green.....	XVIII	35'	d	Livid Pink.....	XXVII	3''	f
Light Payne's Gray.....	XLIX	49''''	d	Livid Purple.....	XXXVII	63''	i
Light Perilla Purple.....	XXXVII	65''	i	Livid Violet.....	XXXVII	61''	i
Light Phlox Purple.....	XI	65	d	Lobelia Violet.....	XXXVII	61''	b
Light Pinkish Cinnamon...	XXIX	15''	d	Lumiere Blue.....	XX	43'	d
Light Pinkish Lilac.....	XXXVII	65''	f	Lumiere Green.....	XVII	29'	b
Light Plumbago Gray.....	L	61''''	f	Lyons Blue.....	IX	51'	i
Light Porcelain Green.....	XXXIII	39''	—	Madder Blue.....	XLIII	53''	—
Light Purple-Drab.....	XLV	1''''	b	*Madder Brown.....	XIII	3'	k
Light Purplish Gray.....	LIII	67''''	b	Madder Violet.....	XXV	63'	k
Light Purplish Vinaceous..	XXXIX	1''	d	*Magenta.....	XXVI	67'	—
Light Quaker Drab.....	LI	1''''	b	Mahogany Red.....	H	7	k
Light Rosolane Purple.....	XXVI	69'	b	*Maize Yellow.....	III	19	f
Light Russet-Vinaceous....	XXXIX	9''	b	*Malachite Green.....	XXXII	35''	b
Light Salmon-Orange.....	II	11	d	Mallow Pink.....	XII	67	f
Light Seal Brown.....	XXXIX	9''	m	Mallow Purple.....	XII	67	b
Light Sky Blue.....	XX	47'	f	Manganese Violet.....	XXV	63'	—
Light Soft Blue-Violet.....	XXIII	55'	b	Marguerite Yellow.....	XXX	23''	f
Light Squill Blue.....	XX	45'	d	*Marine Blue.....	VIII	45	m
Light Sulphate Green.....	XIX	39'	b	*Maroon.....	I	3	m
Light Terre Verte.....	XXXIII	41''	—	*Mars Brown.....	XV	13'	m
Light Turtle Green.....	XXXII	31''	d	Mars Orange.....	II	9	—
Light Tyrian Blue.....	XXXIV	47''	—	Mars Violet.....	XXXVIII	71''	m
Light Varley's Gray.....	XLIX	57''''	b	Mars Yellow.....	III	15	i
Light Vinaceous-Cinnamon	XXIX	13''	d	Martius Yellow.....	III	23	f
Light Vinaceous-Drab.....	XLV	5''''	b	Massicot Yellow.....	XVI	21'	f
Light Vinaceous-Fawn.....	XL	13''	d	Mathews' Blue.....	XX	45'	—
Light Vinaceous-Gray.....	L	69''''	f	Mathews' Purple.....	XXV	65'	—
Light Vinaceous-Lilac.....	XLIV	69''	d	*Mauve.....	XXV	63'	b
Light Vinaceous-Purple....	XLIV	65''	b	Mauvette.....	XXV	65'	f
Light Violet.....	X	59	b	Mazarine Blue.....	IX	49	d
Light Violet-Blue.....	IX	53	b	Meadow Green.....	VI	35	k
Light Violet-Gray.....	LII	59''''	b	Medal Bronze.....	III	19	m
Light Violet-Plumbeous...	XLIX	53''''	d	Medici Blue.....	XLVIII	41''''	b

The first part of the paper discusses the importance of the study of the history of the United States. It is argued that a knowledge of the past is essential for a full understanding of the present. The author then proceeds to discuss the various factors that have shaped the development of the United States, including the role of the government, the influence of the economy, and the impact of the culture. The paper concludes by emphasizing the need for a continued study of the history of the United States in order to ensure a bright future for the nation.

B

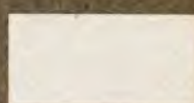
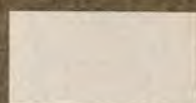
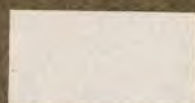
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A small, round, white object.	Ceramic	18th century
A small, round, white object.	Ceramic	18th century
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A small, round, white object.	Ceramic	18th century



7. R-O.

9. OR-O.

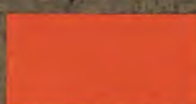
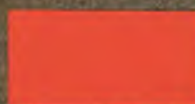
11. ORANGE



Safrano Pink

Orient Pink

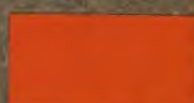
Orange-Pink



Grenadine Pink

Bittersweet Pink

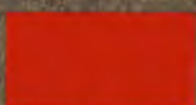
Light Salmon-Orange



Grenadine

Bittersweet Orange

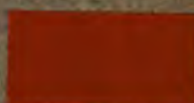
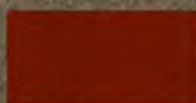
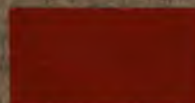
Salmon-Orange



Grenadine Red

\*Flame Scarlet

\*Orange Chrome



English Red

Mars Orange

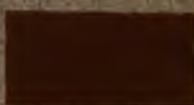
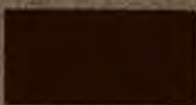
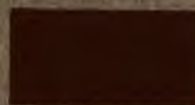
\*Orange Rufous



Mahogany Red

\*Burnt Sienna

Sanford's Brown



\*Bay

\*Chestnut

Auburn





## CAUTION!!!

DO NOT EXPOSE THESE PLATES TO THE LIGHT FOR A  
LONGER TIME THAN IS NECESSARY.

THE pigments used in the preparation of these Plates are the most durable known, those which have been proven unstable having been, as far as possible, discarded. The latter include carmine and other cochineal lakes, colors of vegetable origin (as gamboge, violet carmine, indigo, etc.), and most of the aniline or coal tar dyes, though among the last are a considerable number which are really more permanent than several colors habitually used by artists. Certain colors in this work could not, however, possibly be reproduced except by the employment of pigments which are more or less sensitive to *prolonged exposure* to light, and hence this caution not to expose the plates unnecessarily.

(See Church: "The Chemistry of Paints and Painting," third edition, pages 257-263.)

1911

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1913

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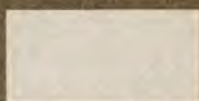
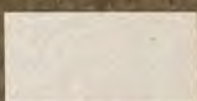
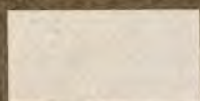
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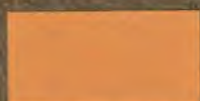
13. OY-O.

15. Y-O.

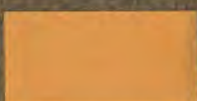
17. O-Y.



*f*



Capucine Buff



Pale Yellow-Orange



Pale Orange-Yellow

*d*



Capucine Orange



\*Orange-Buff

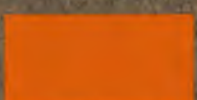


Light Orange-Yellow

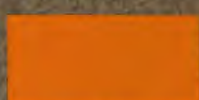
*b*



Mikado Orange



Capucine Yellow



\*Deep Chrome



\*Cadmium Orange

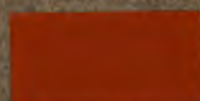


\*Orange



\*Cadmium Yellow

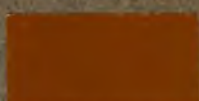
*i*



Xanthine Orange



Mars Yellow



\*Raw Sienna

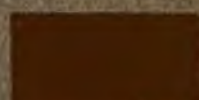
*k*



Amber Brown

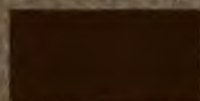


Sudan Brown



Antique Brown

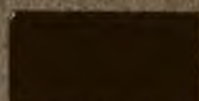
*770*



Argus Brown



Brussels Brown



\*Raw Umber





1. The first part of the report is a general introduction to the subject of the study. It discusses the importance of the study and the objectives of the research.

2. The second part of the report is a detailed description of the methodology used in the study. It includes information about the sample size, the data collection methods, and the statistical analysis techniques.

3. The third part of the report is a discussion of the results of the study. It presents the findings of the research and compares them with the existing literature.

4. The fourth part of the report is a conclusion and a list of references. The conclusion summarizes the main findings of the study, and the references list the sources of information used in the research.

5. The fifth part of the report is a list of appendices. These appendices contain additional information that is relevant to the study but is not included in the main text.

6. The sixth part of the report is a list of figures and tables. These figures and tables provide a visual representation of the data and the results of the study.

7. The seventh part of the report is a list of footnotes. These footnotes provide additional information about the study and the sources of information used in the research.

8. The eighth part of the report is a list of references. These references list the sources of information used in the research.

9. The ninth part of the report is a list of appendices. These appendices contain additional information that is relevant to the study but is not included in the main text.

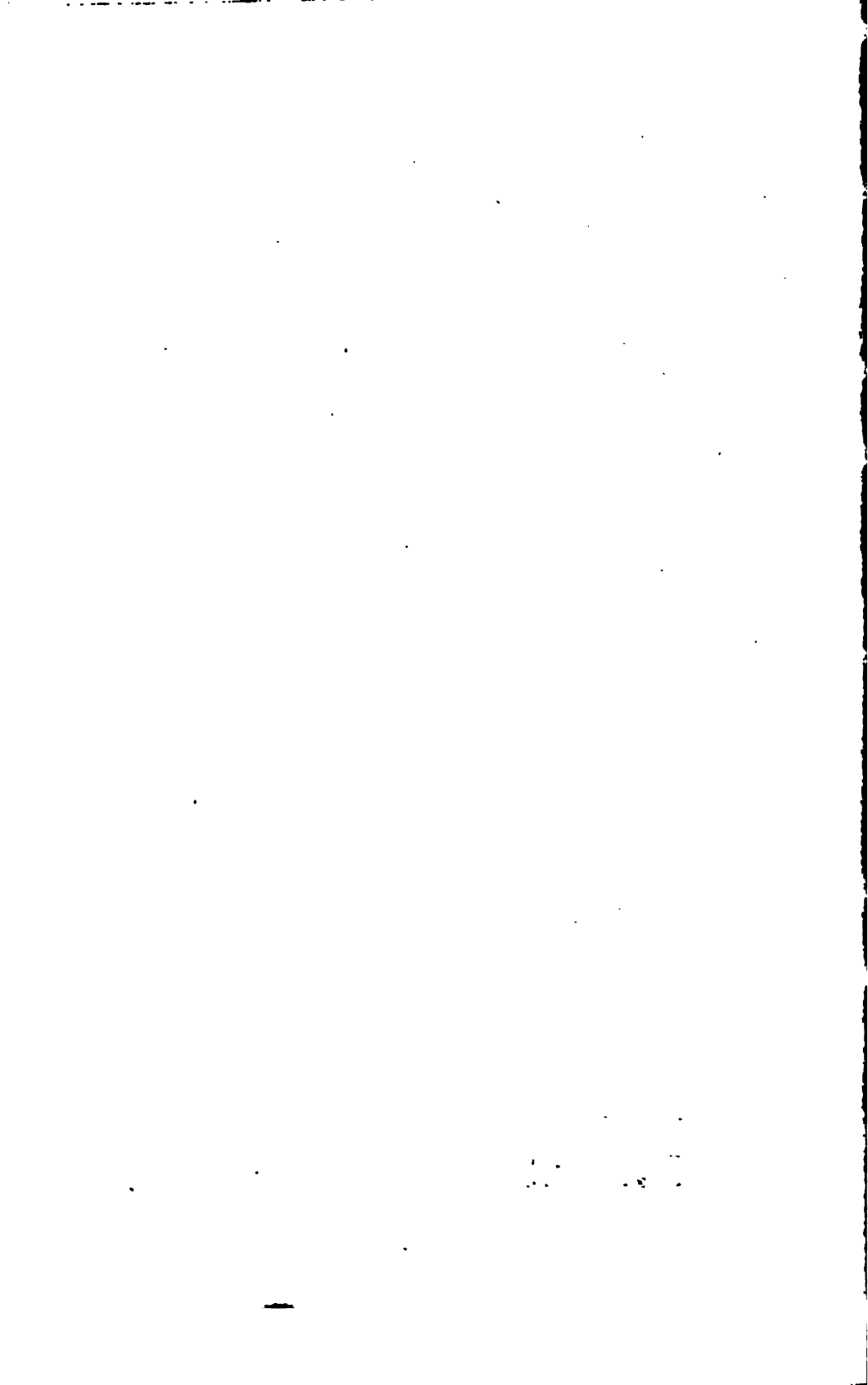
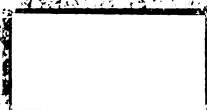
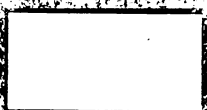


Plate IV

19. YO-Y.

21. O-YY.

23. YELLOW



*f*

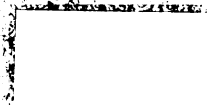


\*Maize Yellow

Baryta Yellow

Martius Yellow

*d*

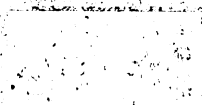
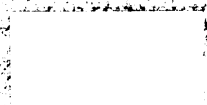


\*Buff-Yellow

Pinard Yellow

Picnic Yellow

*b*

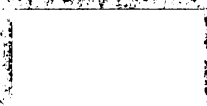
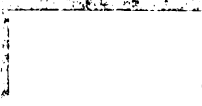


Apricot Yellow

Empire Yellow

Pale Lemon Yellow

*i*

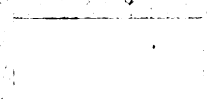


Light Cadmium

Lemon Chrome

\*Lemon Yellow

*k*

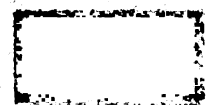
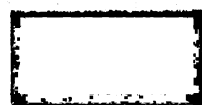


Aniline Yellow

Sulphine Yellow

Pyrite Yellow

*m*



Orange-Citrine

Citrine

Warbler Green



Medal Bronze

Dark Citrine

\*Olive-Green





THE  
FEDERAL BUREAU OF INVESTIGATION  
UNITED STATES DEPARTMENT OF JUSTICE  
WASHINGTON, D. C. 20535

TO : DIRECTOR, FBI (100-374301) (P)

FROM : SAC, NEW YORK (100-100000) (P)

SUBJECT: [REDACTED] (P)

RE: [REDACTED] (P)

DATE: [REDACTED] (P)

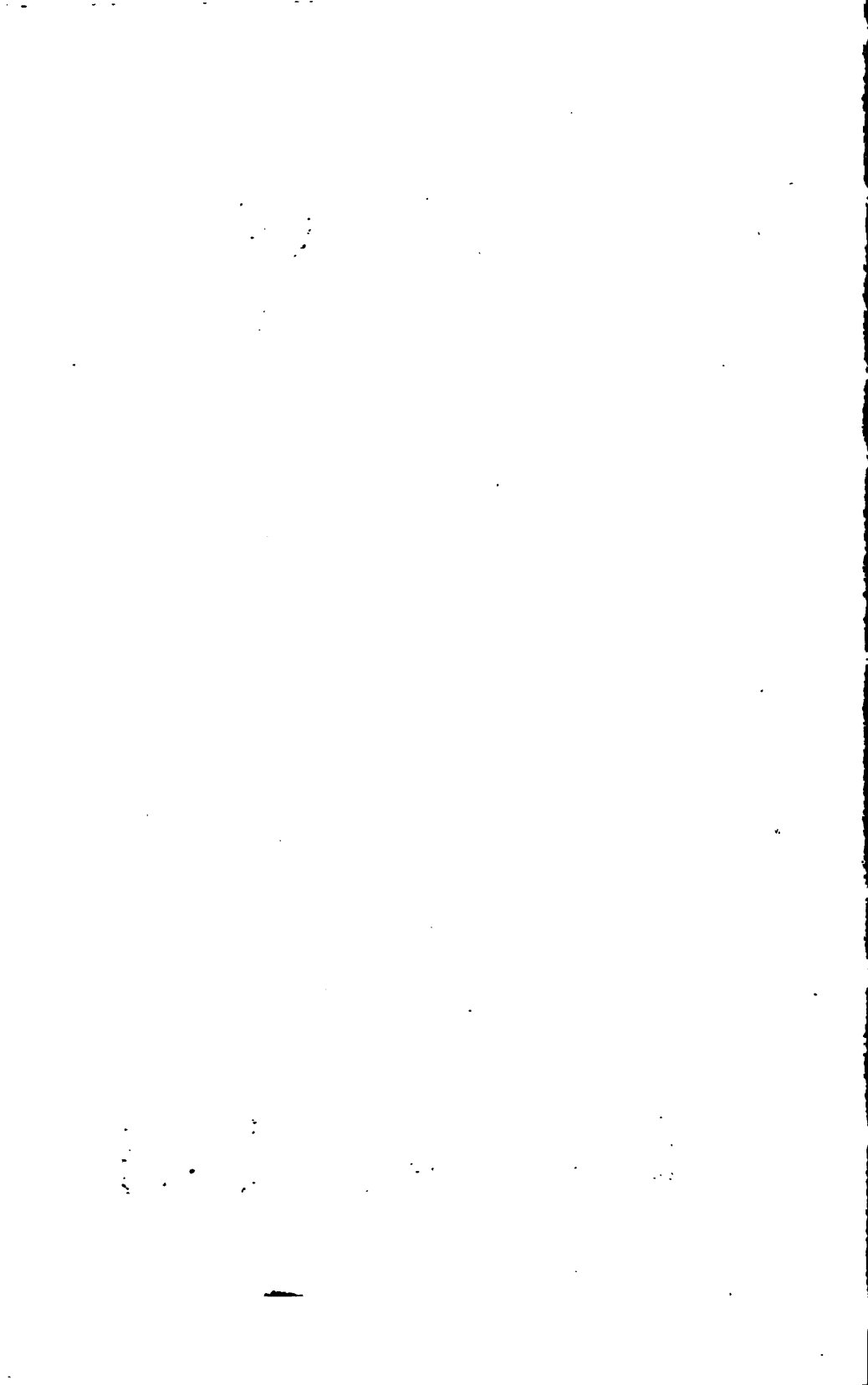
BY: [REDACTED] (P)

CLASSIFICATION: [REDACTED] (P)

[REDACTED]

[REDACTED]

[REDACTED]

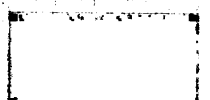
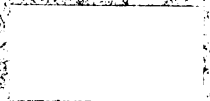
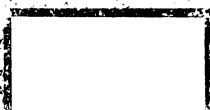
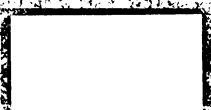
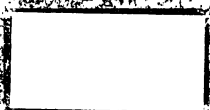




25. YG-Y.

27. G-Y.

29. GG-Y.





The following is a list of the names of the persons who have been appointed to the various positions in the Department of the Interior, under the act of March 3, 1879, entitled "An Act to provide for the better management of the public lands, and for other purposes."

2

The following is a list of the names of the persons who have been appointed to the various positions in the Department of the Interior, under the act of March 3, 1879, entitled "An Act to provide for the better management of the public lands, and for other purposes."

6

The following is a list of the names of the persons who have been appointed to the various positions in the Department of the Interior, under the act of March 3, 1879, entitled "An Act to provide for the better management of the public lands, and for other purposes."

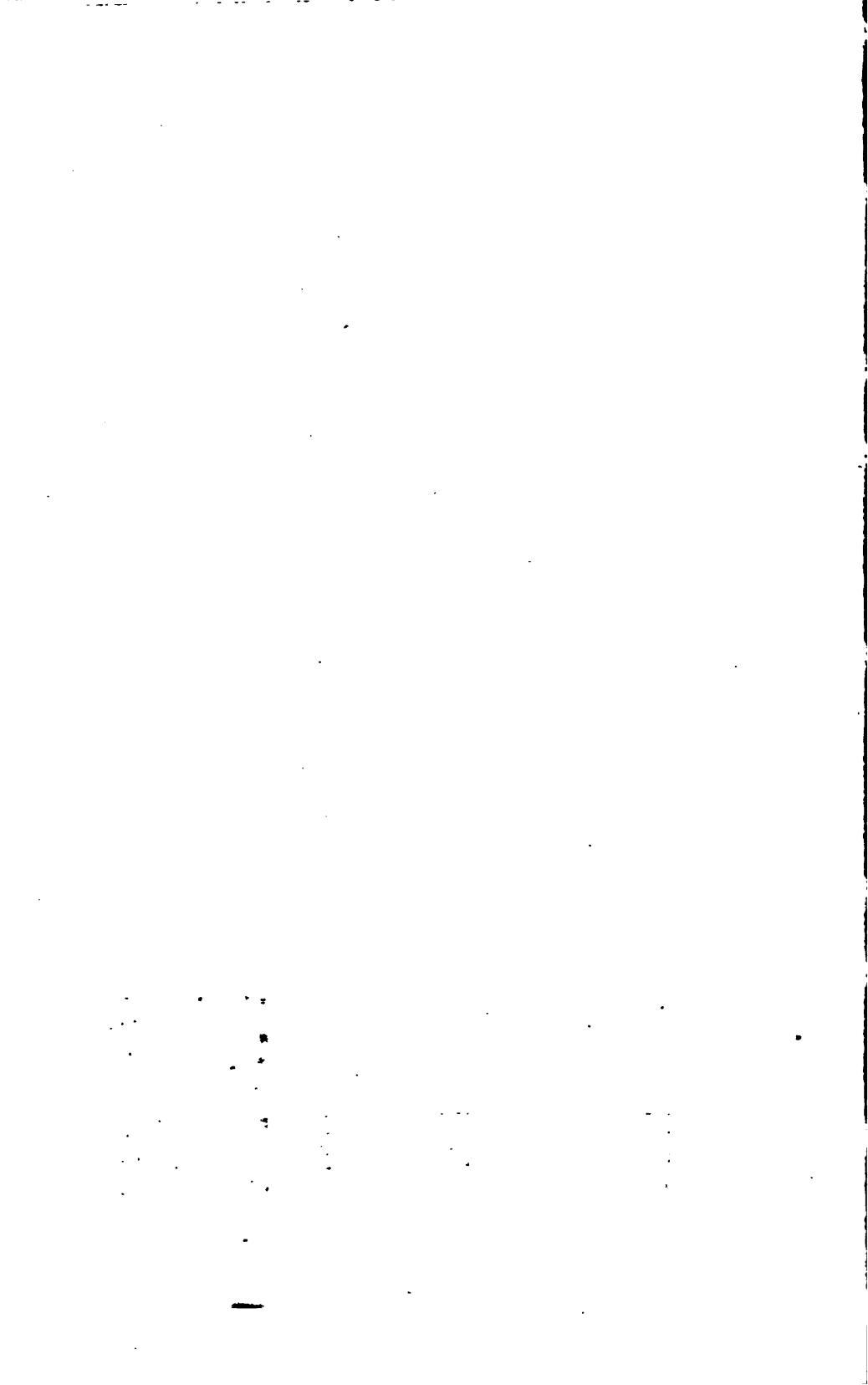
2

The following is a list of the names of the persons who have been appointed to the various positions in the Department of the Interior, under the act of March 3, 1879, entitled "An Act to provide for the better management of the public lands, and for other purposes."

2

The following is a list of the names of the persons who have been appointed to the various positions in the Department of the Interior, under the act of March 3, 1879, entitled "An Act to provide for the better management of the public lands, and for other purposes."

The following is a list of the names of the persons who have been appointed to the various positions in the Department of the Interior, under the act of March 3, 1879, entitled "An Act to provide for the better management of the public lands, and for other purposes."



31. Y-G.

33. GY-G.

35. GREEN

*f*

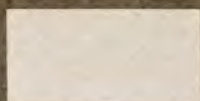
*d*

*b*

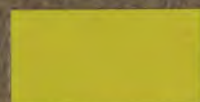
*i*

*k*

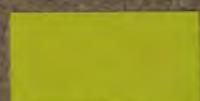
*m*



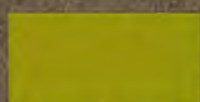
Pale Yellow-Green



Light Yellow-Green



Clear Yellow-Green



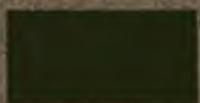
Yellow-Green



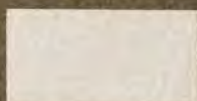
Calliste Green



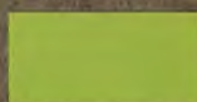
\*Parrot Green



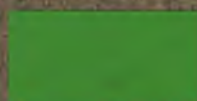
Cedar Green



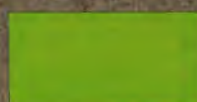
Light Viridine Green



Viridine Green



Vanderpoel's Green



Night Green



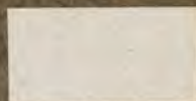
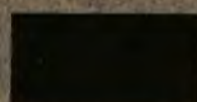
Scheele's Green



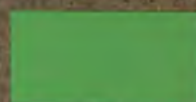
\*Grass Green



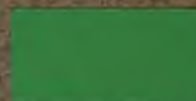
Cossack Green



Pale Cendre Green



Light Cendre Green



Cendre Green



\*Emerald Green



Peacock Green



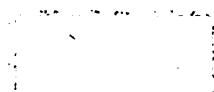
Meadow Green



Antique Green





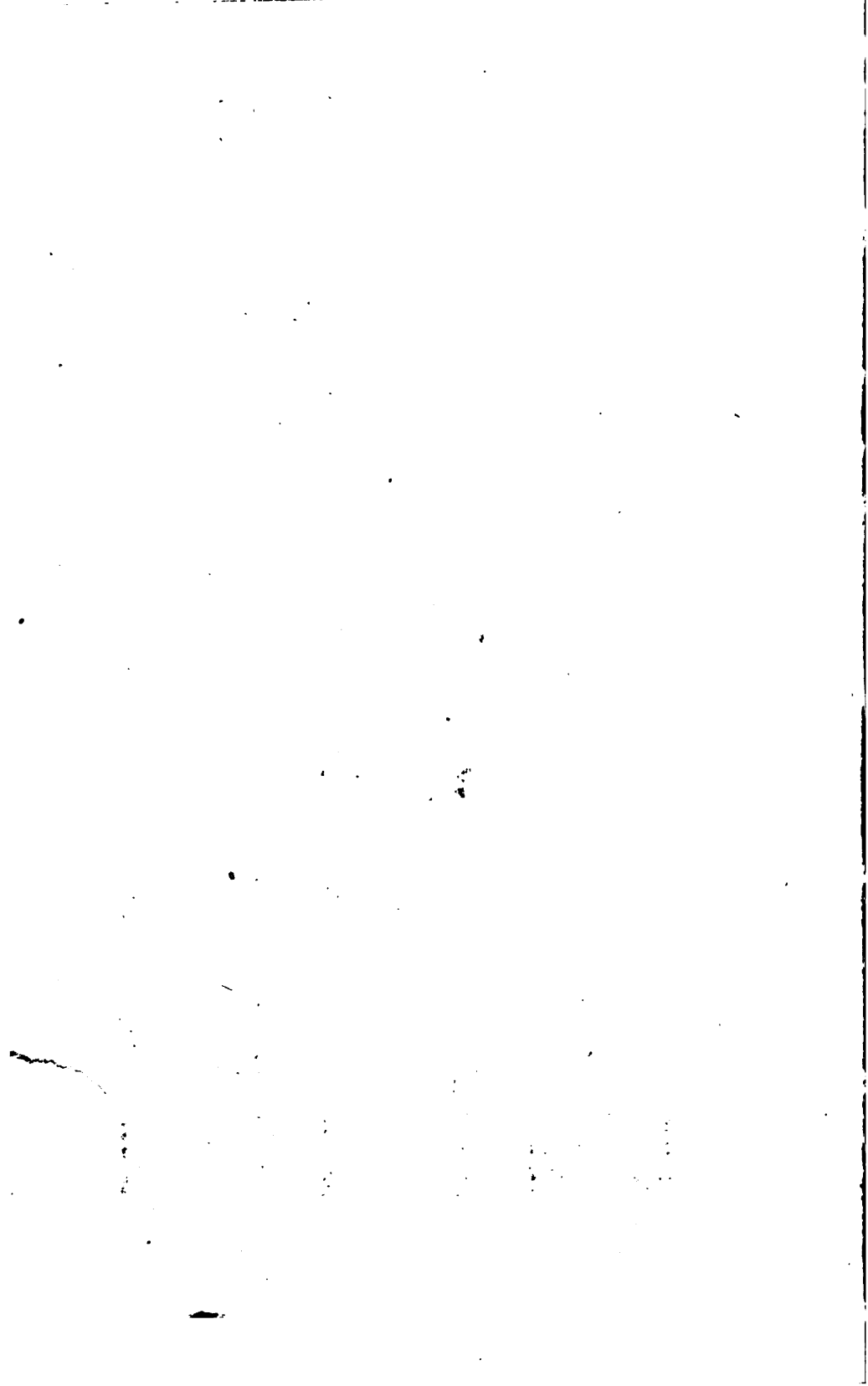


f

d

b

NAME	ADDRESS	CITY
J. H. Smith	123 Main St	New York
W. E. Jones	456 Elm St	Chicago
M. L. Brown	789 Oak St	Boston
R. T. White	101 Pine St	Philadelphia
S. K. Green	234 Cedar St	San Francisco
L. P. Black	567 Birch St	Los Angeles
D. M. Gray	890 Spruce St	Portland
H. J. Hall	1122 Ash St	Seattle
K. A. Young	1444 Willow St	Denver
N. B. King	1777 Maple St	Houston
P. C. Lee	2000 Poplar St	Dallas
Q. D. Scott	2333 Hickory St	Austin
R. E. Walker	2666 Walnut St	Fort Worth
S. F. Hill	2999 Chestnut St	San Antonio
T. G. Adams	3333 Sycamore St	El Paso
U. H. Baker	3666 Magnolia St	Phoenix
V. I. Carter	3999 Dogwood St	Tucson
W. J. Evans	4333 Redwood St	Albuquerque
X. K. Fisher	4666 Cypress St	Santa Fe
Y. L. Grant	4999 Juniper St	Las Vegas
Z. M. Harris	5333 Fir St	Nashville

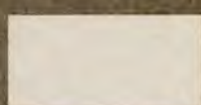
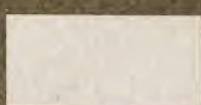




37. GB-G.

39. B-G.

41. BB-G.



1



Opaline Green



Pale Blue-Green

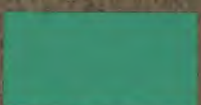


Pale Turquoise Green

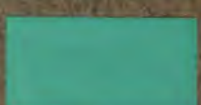
2



Neuvidier Green



Light Blue-Green



Turquoise Green

3



Chrysoprase Green



Tyrolite Green



Venice Green

4



Vivid Green



Skobeloff Green



Benzol Green

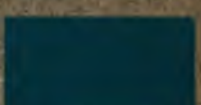
5



\*Viridian Green



Guinea Green



Ethyl Green

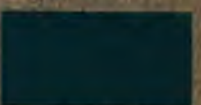
6



Dark Viridian Green

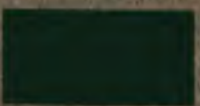


Wall Green



Sorrento Green

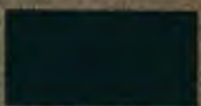
7



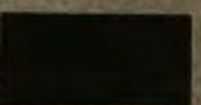
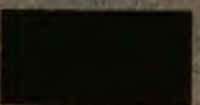
Diamine Green



Anthracene Green



\*Myrtle Green





1914

1915

1916

1917

1918

1919

1920

1921

1922

1923

1924

1925

1926

1927

1928

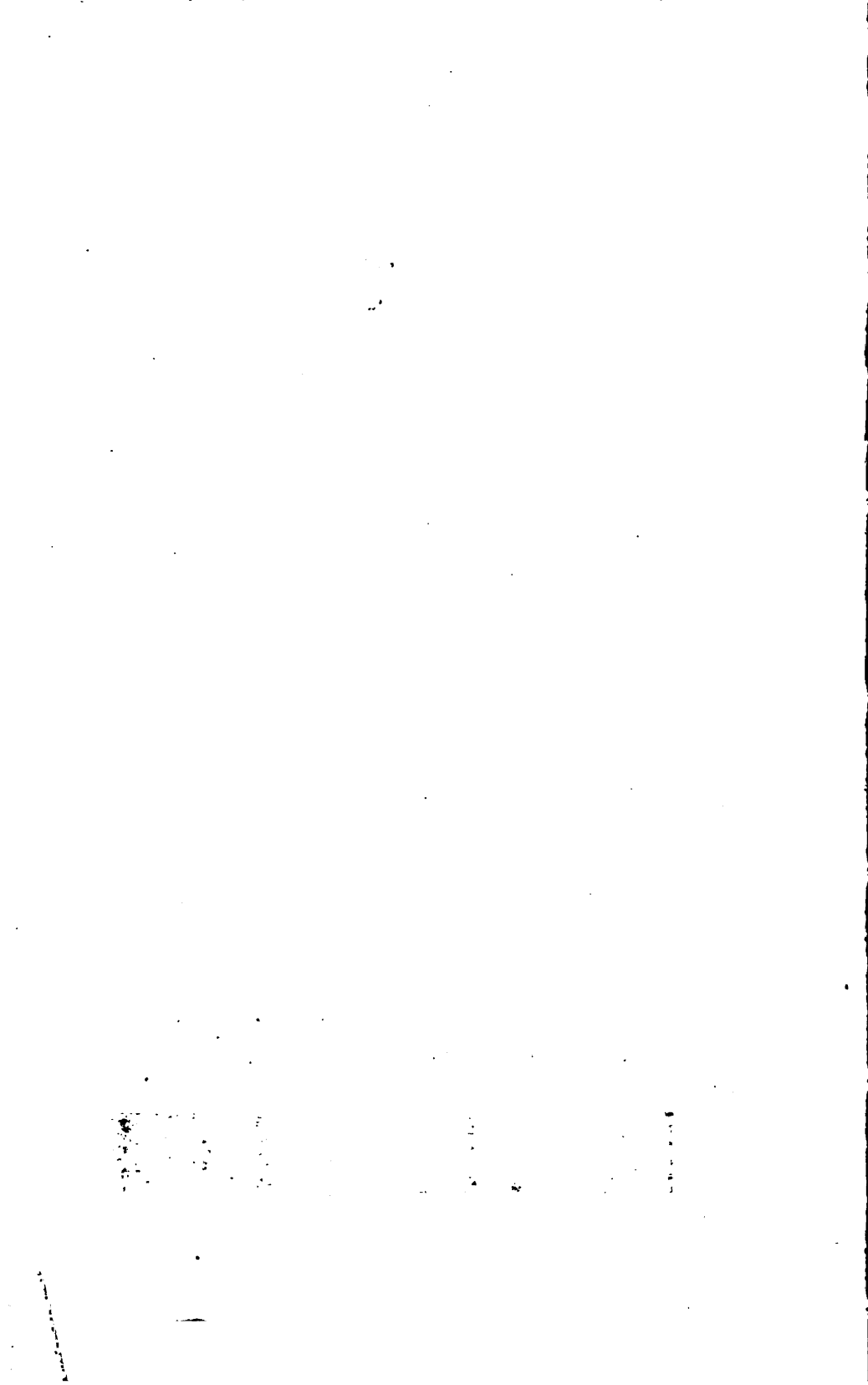
1929

1930

1931

1932

1933



43. G-B.



45. BG-B.



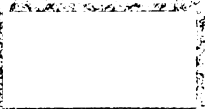
47. G-BB.



f



Beryl Blue

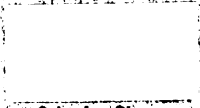


\*Pale Blue: (Ethyl Blue)



Pallid Methyl Blue

d



Calamine Blue



Pale Cerulean Blue



Pale Methyl Blue

b



Cendre Blue



Light Cerulean Blue



Light Methyl Blue

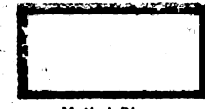
i



Italian Blue



\*Cerulean Blue



Methyl Blue

k



Peacock Blue



Oxide Blue



Leitch's Blue

m



Patent Blue



\*Antwerp Blue



\*Paris Blue



Blackish Green-Blue



\*Marine Blue



\*Berlin Blue





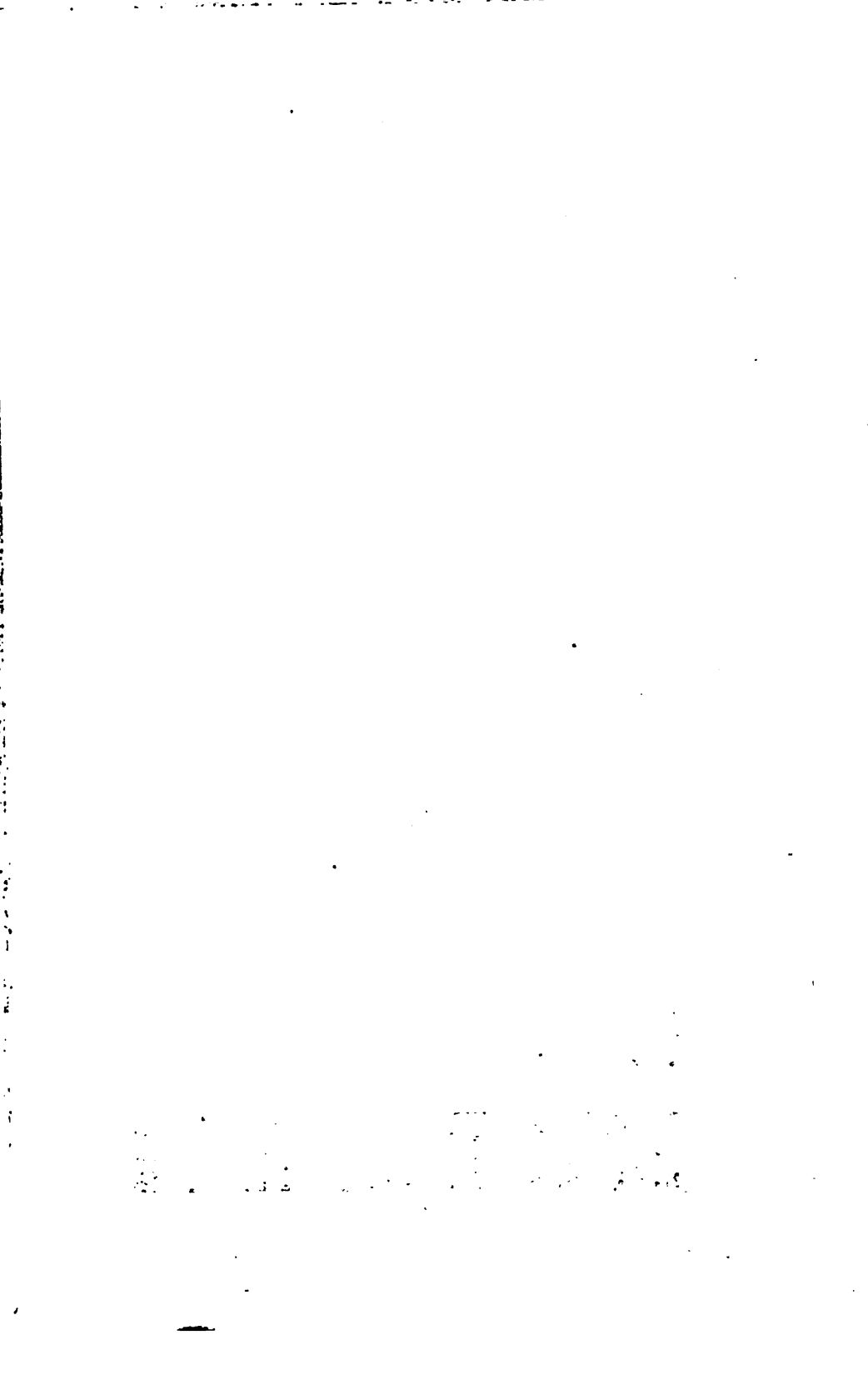
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[illegible][illegible]

<p>1. <i>Chlorophyll a</i> (mg/g)</p> <p>2. <i>Chlorophyll b</i> (mg/g)</p> <p>3. <i>Chlorophyll a + b</i> (mg/g)</p> <p>4. <i>Chlorophyll a/b ratio</i></p>	<p>5. <i>Carotenoids</i> (mg/g)</p> <p>6. <i>Carotenoids/a + b ratio</i></p> <p>7. <i>Chlorophyll content index</i></p> <p>8. <i>Chlorophyll fluorescence</i></p>	<p>9. <i>Chlorophyll fluorescence</i></p> <p>10. <i>Chlorophyll fluorescence</i></p> <p>11. <i>Chlorophyll fluorescence</i></p> <p>12. <i>Chlorophyll fluorescence</i></p>
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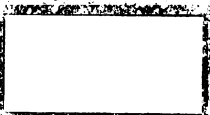




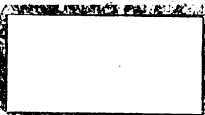
49. BLUE



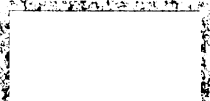
51. BV-B.



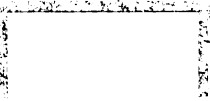
53. V-B.



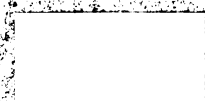
*f*



Pale Mazarine Blue



Pale Amparo Blue

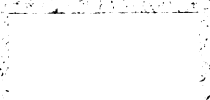


Pallid Violet-Blue

*d*



Mazarine Blue



Light Amparo Blue



Pale Violet-Blue

*b*



Salvia Blue



Amparo Blue



Light Violet-Blue

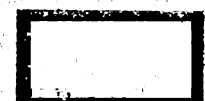
*z*



Spectrum Blue



Bradley's Blue

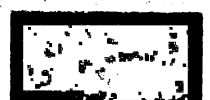


Phenyl Blue

*k*



\*Ultramarine Blue



Lyons Blue



\*Smalt Blue

*m*



Rood's Blue



Helvetia Blue



Hay's Blue



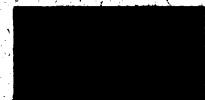
Prussian Blue



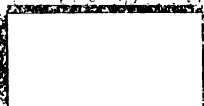
\*Cyanine Blue



Azurite Blue



7. R-O.



9. OR-O.



11. ORANGE



Pale Flesh Color

Pale Salmon Color

Seashell Pink

\*Flesh Color

\*Salmon Color

\*Salmon-Butt

Carrot Red

Flesh-Ocher

Apricot Buff

Carmelian Red

\*Rufous

Apricot Orange

\*Vineous-Rufous

\*Ferruginous

\*Cinnamon-Rufous

Hay's Russet

Kaiser Brown

\*Hazel

\*Liver Brown

Carob Brown

Chestnut-Brown





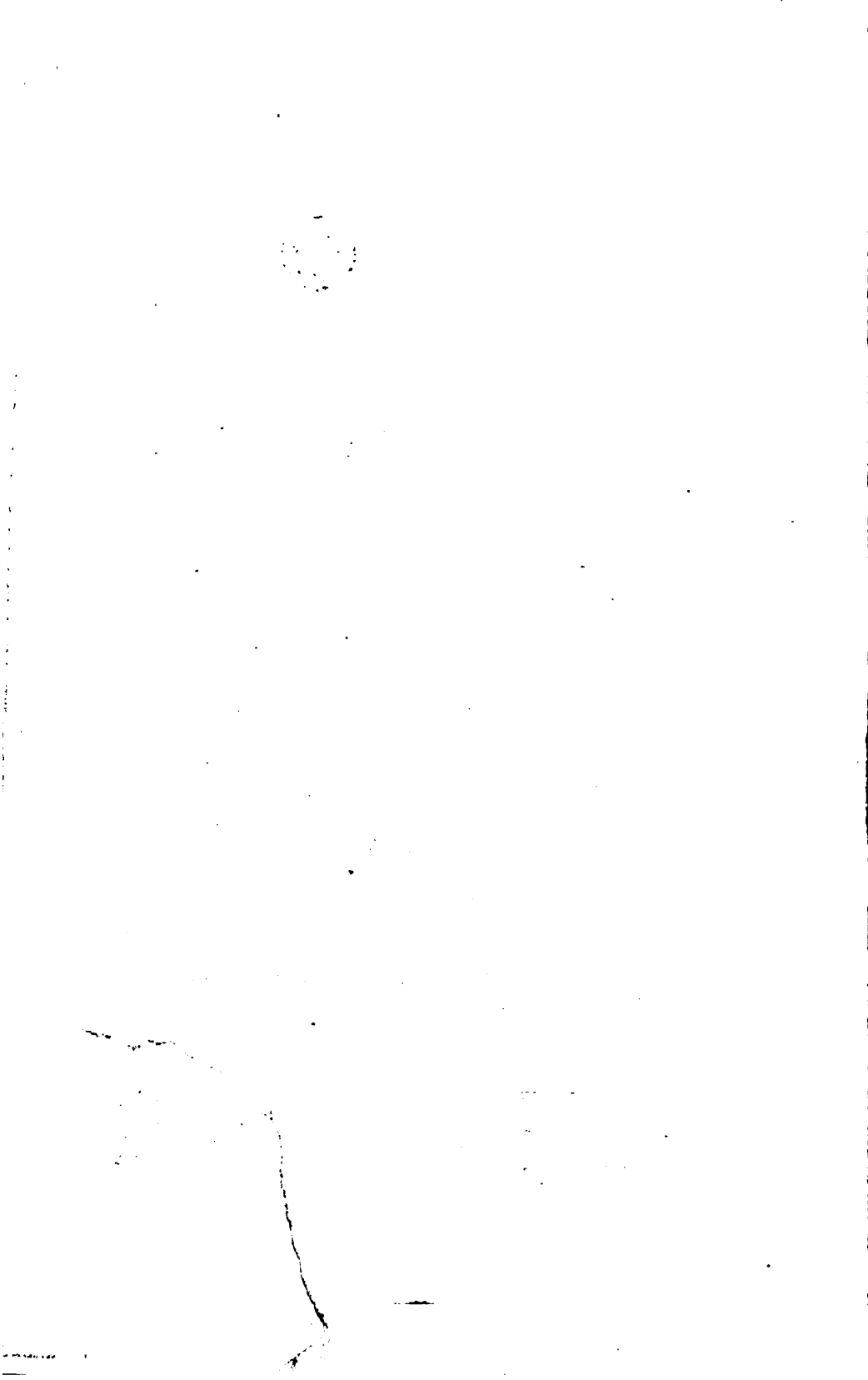
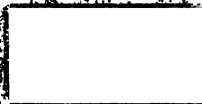
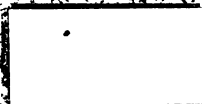


Plate XV

13'. OY-O

15'. Y-O.

17'. O-Y.



Pale Ochraceous-Salmon

Pale Ochraceous-Buff

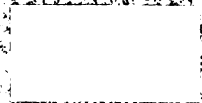
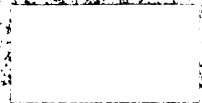
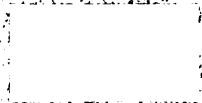
Light Buff



Light Ochraceous-Salmon

Light Ochraceous-Buff

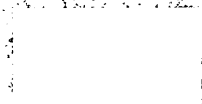
Warm Buff



Ochraceous-Salmon

\*Ochraceous-Buff

Antimony Yellow



Zinc Orange

Ochraceous-Orange

Yellow Ocher.



\*Tawny

Ochraceous-Tawny

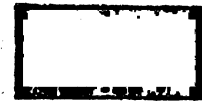
Buckthorn Brown



\*Russet

Cinnamon-Brown

Dresden Brown

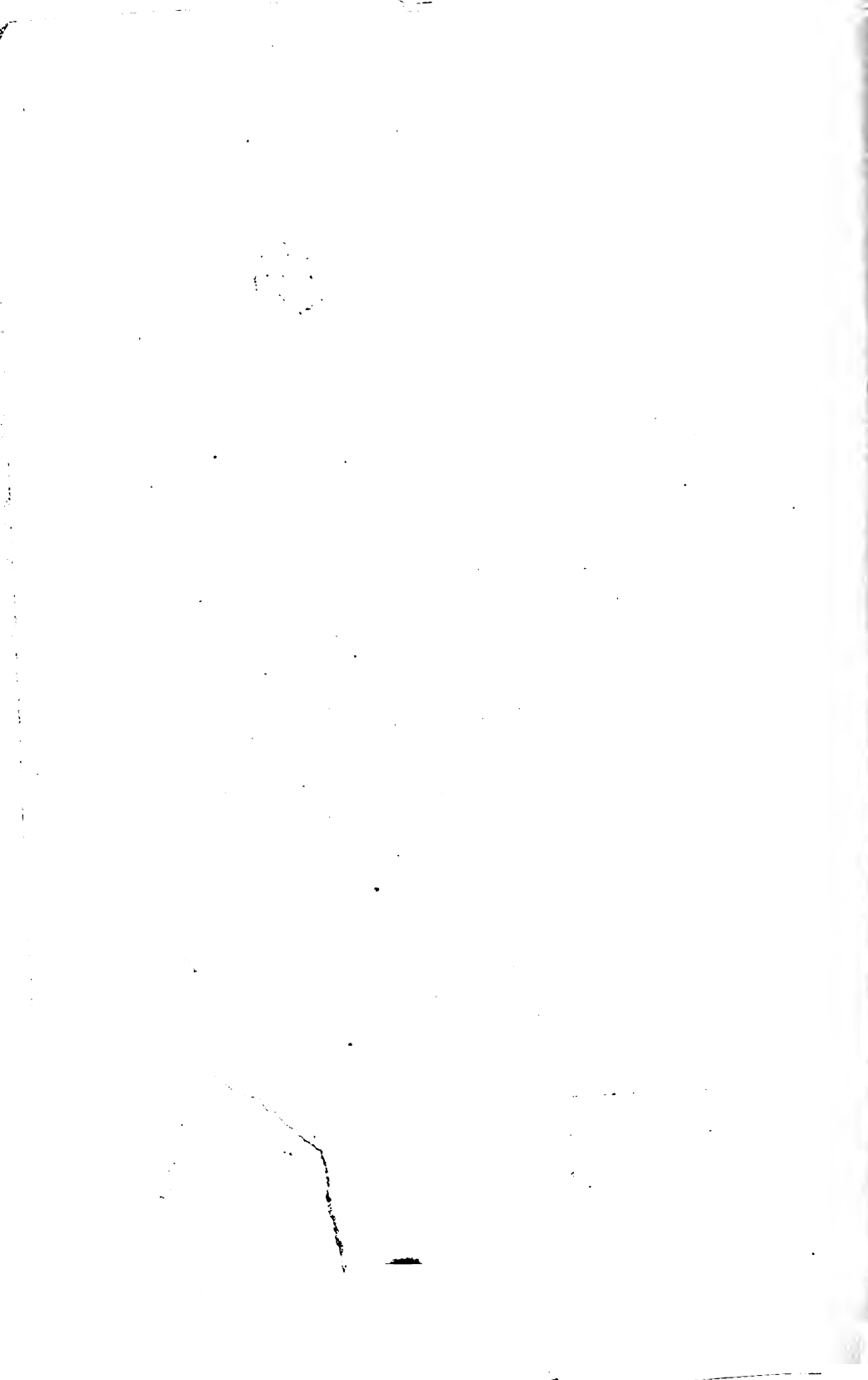


\*Mars Brown

\*Prout's Brown

\*Mummy Brown

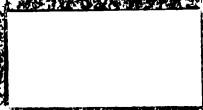




13. OY-O

15. Y-O.

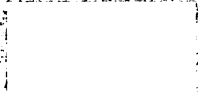
17. O-Y.



Pale Ochraceous-Salmon

Pale Ochraceous-Buff

Light Buff



Light Ochraceous-Salmon

Light Ochraceous-Buff

Warm Buff



Ochraceous-Salmon

\*Ochraceous-Buff

Antimony Yellow



Zinc Orange

Ochraceous-Orange

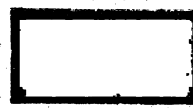
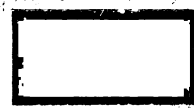
Yellow Ocher



\*Tawny

Ochraceous-Tawny

Buckthorn Brown



\*Russet

Cinnamon-Brown

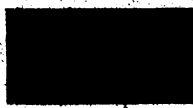
Dresden Brown



\*Mars Brown

\*Prout's Brown

\*Mummy Brown







NAME	AGE	SEX	OCCUPATION
J. A. Smith	35	M	Farmer
M. B. Jones	28	F	Teacher
W. C. Brown	42	M	Merchant
L. D. White	30	M	Physician
H. E. Green	25	F	Nurse
R. F. Black	38	M	Engineer
S. G. Gray	22	M	Student
T. H. Hall	45	M	Lawyer
K. L. King	32	F	Homemaker
P. M. Lee	27	M	Carpenter
Q. N. Miller	33	F	Bookkeeper
U. O. Nelson	40	M	Blacksmith
V. P. Owen	29	F	Dressmaker
X. Q. Parker	36	M	Farmer
Y. R. Quinn	24	F	Teacher
Z. S. Reed	41	M	Merchant
A. T. Stiles	31	F	Nurse
B. U. Taylor	26	M	Engineer
C. V. Walker	39	F	Homemaker
D. W. Young	23	M	Student
E. X. Zeller	43	M	Lawyer
F. Y. Baker	34	F	Bookkeeper
G. Z. Carter	28	M	Carpenter
H. A. Evans	37	F	Dressmaker
I. B. Foster	21	M	Farmer
J. C. Gibson	44	F	Teacher
K. D. Hall	35	M	Merchant
L. E. Ingram	25	F	Nurse
M. F. Jackson	46	M	Engineer
N. G. Keller	32	F	Homemaker

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PRESS

19'. YO-Y.



21'. O-YY.



23'. YELLOW



*f*



Cream Color

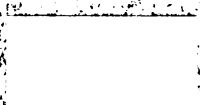


Massicot Yellow

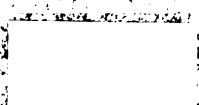


Naphthalene Yellow

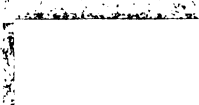
*d*



\*Naples Yellow

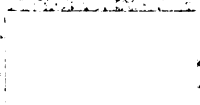


\*Straw Yellow

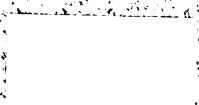


Barium Yellow

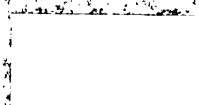
*b*



Mustard Yellow



Amber Yellow

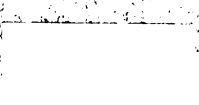


\*Citron Yellow

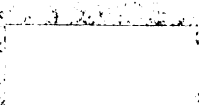
*i*



Primuline Yellow



\*Wax Yellow

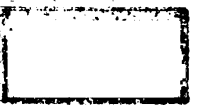


Strontian Yellow

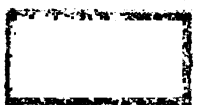
*k*



Buffy Citrine



Dull Citrine



Serpentine Green

*m*



Saccardo's Olive



Olive Citrine



Roman Green









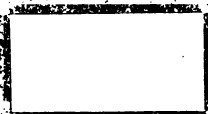
14

15

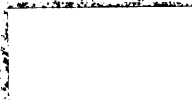
25° YG-Y.

27° G-Y.

29° GG-Y.



f



Pale Chalcedony Yellow

Pale Dull Green-Yellow

Pale Lumiere Green

d

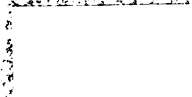


Light Chalcedony Yellow

Light Dull Green-Yellow

Light Lumiere Green

b



Chalcedony Yellow

Clear Dull Green-Yellow

Lumiere Green

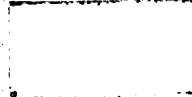


Bright Chalcedony Yellow

Dull Green-Yellow

\*Apple Green

i

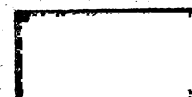


Courge Green

Biscay Green

Light Bice Green

k

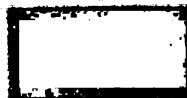


Light Hellebore Green

Light Elm Green

\*Bice Green

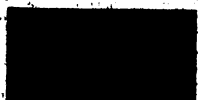
m



Hellebore Green

Elm Green

Forest Green







1. The first part of the report deals with the general situation of the country and the progress of the work. It is a very interesting and useful summary of the work done during the year.

2. The second part of the report deals with the results of the work. It is a very interesting and useful summary of the work done during the year.

3. The third part of the report deals with the results of the work. It is a very interesting and useful summary of the work done during the year.

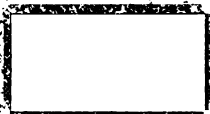
4. The fourth part of the report deals with the results of the work. It is a very interesting and useful summary of the work done during the year.



31'. Y-G.

33'. GY-G.

35'. GREEN



Pale Veronese Green

Pale Tiber Green

Oural Green

d



Veronese Green

Tiber Green

Light Paris Green

b



Rivage Green

Light Oriental Green

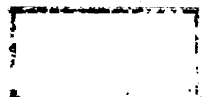
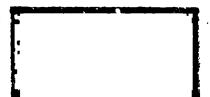
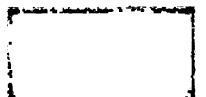
\*Paris Green

Mineral Green

Oriental Green

Motmot Green

z

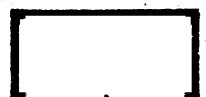


Rinneemann's Green

Winter Green

Killarney Green

k



Civette Green

Hay's Green

Ackermann's Green

m



Varley's Green

Dark Yellowish Green

Dark Green





The first part of the paper is devoted to a discussion of the general principles of the theory of the structure of the atom. It is shown that the structure of the atom is determined by the laws of quantum mechanics, and that the structure of the atom is determined by the laws of quantum mechanics.

The second part of the paper is devoted to a discussion of the general principles of the theory of the structure of the atom. It is shown that the structure of the atom is determined by the laws of quantum mechanics, and that the structure of the atom is determined by the laws of quantum mechanics.

The third part of the paper is devoted to a discussion of the general principles of the theory of the structure of the atom. It is shown that the structure of the atom is determined by the laws of quantum mechanics, and that the structure of the atom is determined by the laws of quantum mechanics.

The fourth part of the paper is devoted to a discussion of the general principles of the theory of the structure of the atom. It is shown that the structure of the atom is determined by the laws of quantum mechanics, and that the structure of the atom is determined by the laws of quantum mechanics.

The fifth part of the paper is devoted to a discussion of the general principles of the theory of the structure of the atom. It is shown that the structure of the atom is determined by the laws of quantum mechanics, and that the structure of the atom is determined by the laws of quantum mechanics.

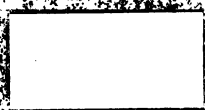
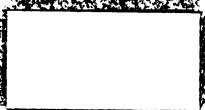
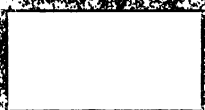


the 1990s, the number of people in the United States who are 65 years of age or older is projected to increase from 20 million to 30 million, and the number of people 75 years of age or older is projected to increase from 10 million to 15 million (U.S. Census Bureau, 1996). The number of people 85 years of age or older is projected to increase from 2 million to 4 million (U.S. Census Bureau, 1996). The number of people 90 years of age or older is projected to increase from 500,000 to 1 million (U.S. Census Bureau, 1996). The number of people 95 years of age or older is projected to increase from 100,000 to 200,000 (U.S. Census Bureau, 1996). The number of people 100 years of age or older is projected to increase from 10,000 to 20,000 (U.S. Census Bureau, 1996).

37'. GB-G.

39'. B-G.

41'. BB-G.



Dull Opaline Green

Microcline Green

Pale Nile Blue



Variscite Green

Pale Sulphate Green

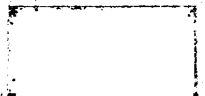
\*Nile Blue



Cobalt Green

Light Sulphate Green

\*Beryl Green



\*Verdigris Green

Sulphate Green

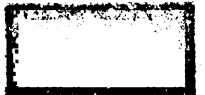
Methyl Green



Zinc Green

Dark Sulphate Green

\*Sea Green



Dark Zinc Green

Dark Cinnabar Green

Prussian Green



\*Bottle Green

Duck Green

Invisible Green



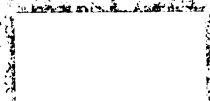
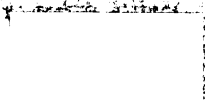




Plate XX

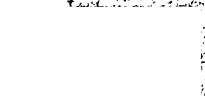
45' BG-B.

47' G-BB.



Persian Blue

Light Sky Blue



Blue

Sky Blue



Yale Blue



Olympic Blue



Terpoel's Blue



Hue



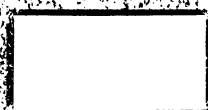
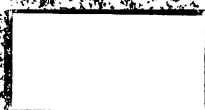
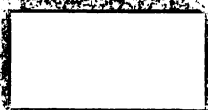
**Abstract**

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43' G-B.

45' BG-B.

47' G-BB.



Etain Blue

Persian Blue

Light Sky Blue

Lumjere Blue

Light Squill Blue

Sky Blue

Bremen Blue

Squill Blue

Yale Blue

Motmot Blue

Mathews' Blue

Olympic Blue

Capri Blue

\*China Blue

Vanderpoel's Blue

Jouvence Blue

Chessylite Blue

Blanc's Blue

Dusky Green-Blue (1)

Dark Chessylite Blue

Dusky Greenish Blue





THE UNIVERSITY OF CHICAGO

DEPARTMENT OF CHEMISTRY

PHYSICAL CHEMISTRY

LECTURE NOTES

BY

PROFESSOR

JOHN V. KILPATRICK



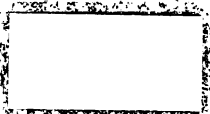
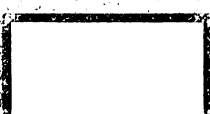
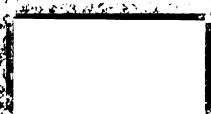


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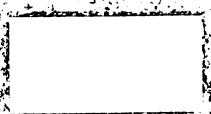
49. BLUE

51. BY-B.

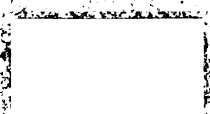
53. V-B.



Pale Grayish Blue

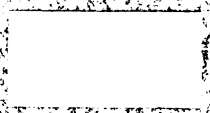


Wedgewood Blue

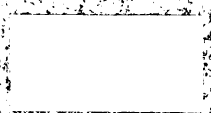


Light Lavender-Blue

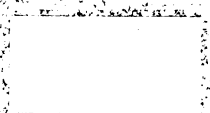
d.



Pale Cadet Blue

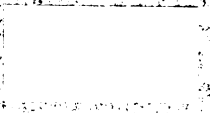


Deep Wedgewood Blue

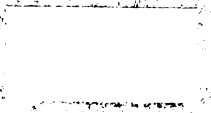


Lavender-Blue

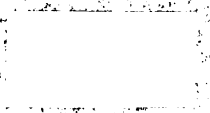
b



Light Cadet-Blue



\*Flax-flower Blue



Deep Lavender-Blue



Clear Cadet Blue



Commelina Blue



Cornflower Blue

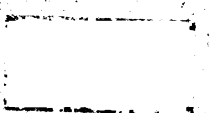
i.



Cadet-Blue

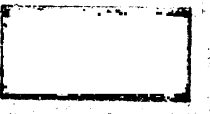


Diva-Blue

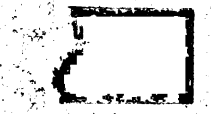


Gentian Blue

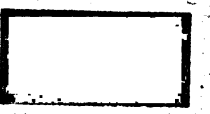
k



Deep Cadet Blue



Dark Diva Blue



Sailor Blue

m



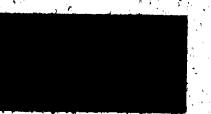
Dark Cadet Blue



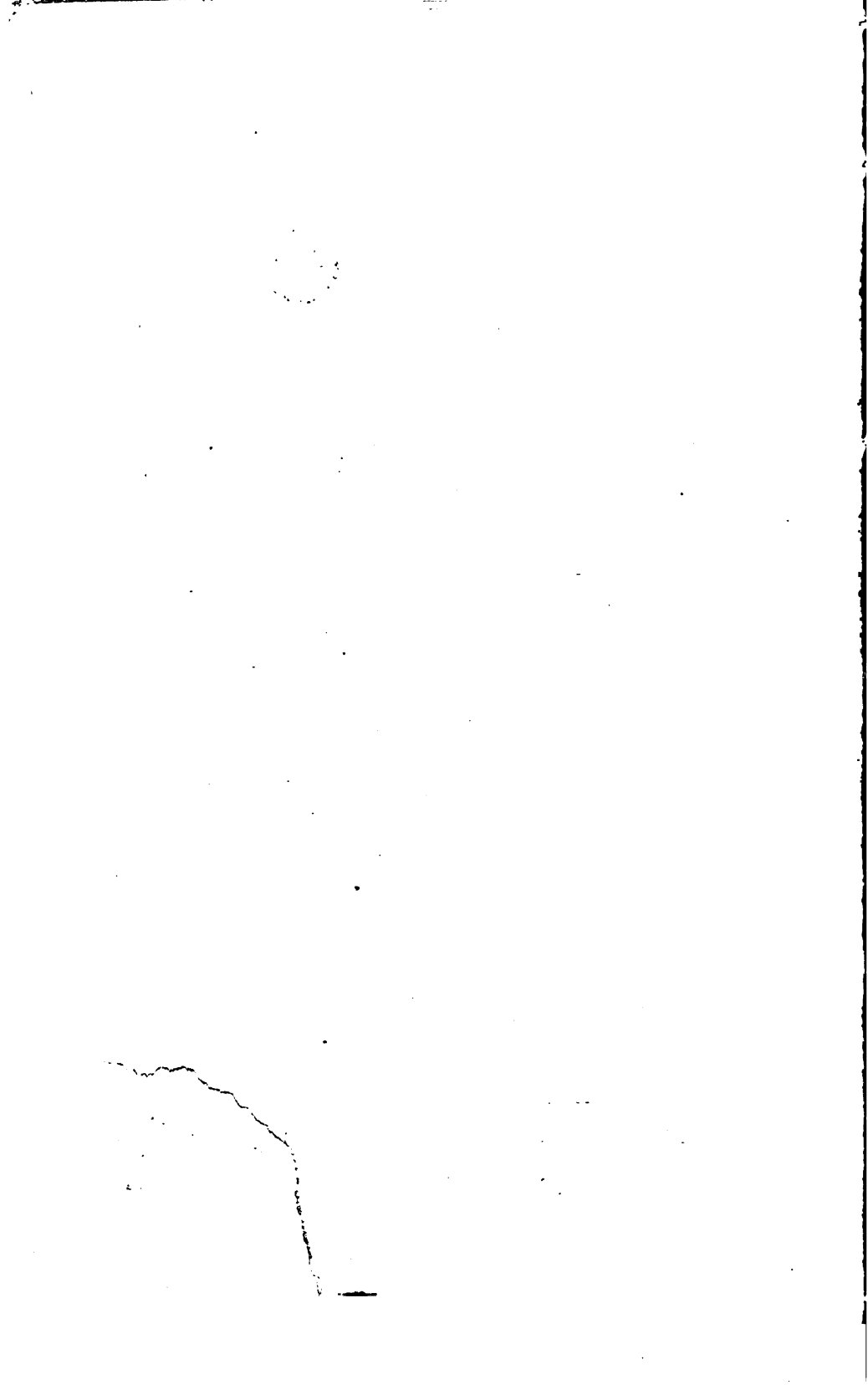
Alizarine Blue



Navy Blue



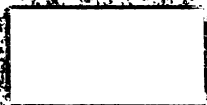
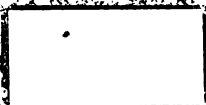




13. OY-O

15. Y-O.

17. O-Y.



f



Pale Ochraceous-Salmon

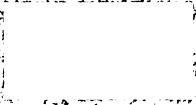


Pale Ochraceous-Buff



Light Buff

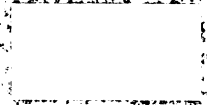
d



Light Ochraceous-Salmon

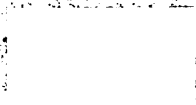


Light Ochraceous-Buff



Warm Buff

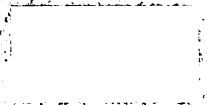
b



Ochraceous-Salmon



\*Ochraceous-Buff



Antimony Yellow

i



Zinc Orange

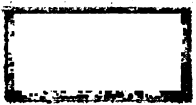


Ochraceous-Orange



Yellow Ocher

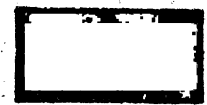
k



\*Russet



Cinnamon-Brown



Dresden Brown

m



\*Mars Brown



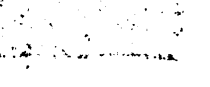
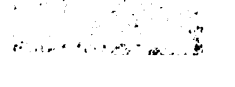
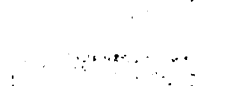
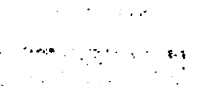
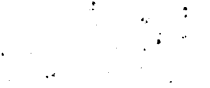
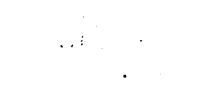
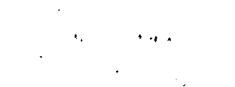
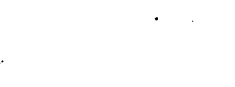
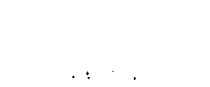
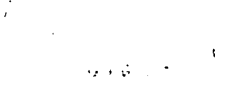
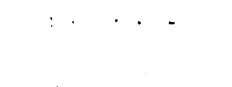
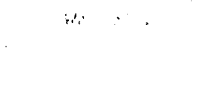
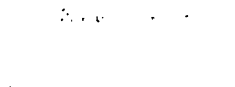
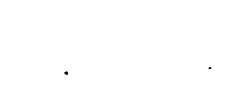
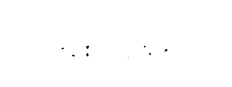
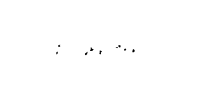
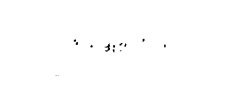
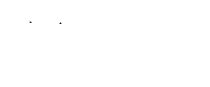
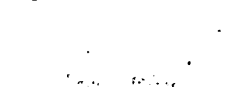
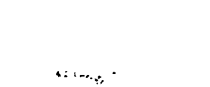
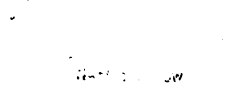
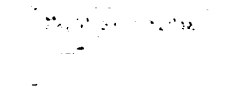
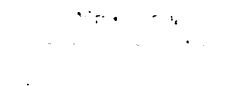
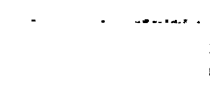
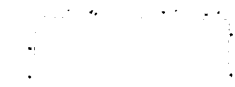
\*Prout's Brown



\*Mugny Brown





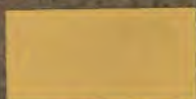
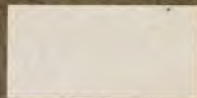
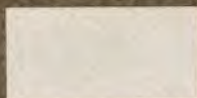
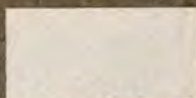


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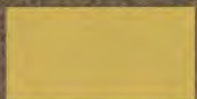
19'. YO-Y.

21'. O-YY.

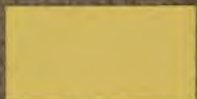
23'. YELLOW



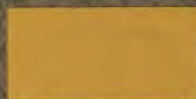
\*Cream Color



Massicot Yellow



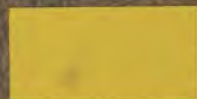
Naphthalene Yellow



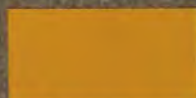
\*Naples Yellow



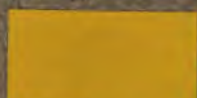
\*Straw Yellow



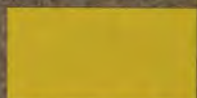
Barium Yellow



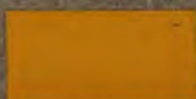
Mustard Yellow



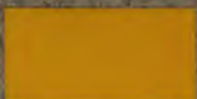
Amber Yellow



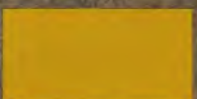
\*Citron Yellow



Primuline Yellow



\*Wax Yellow



Strontian Yellow



Old Gold



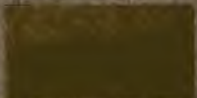
Olive-Lake



Yellowish Citrine



Buffy Citrine



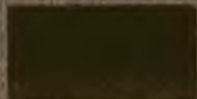
Dull Citrine



\*Serpentine Green



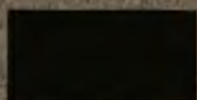
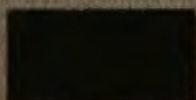
Saccardo's Olive



Olive-Citrine



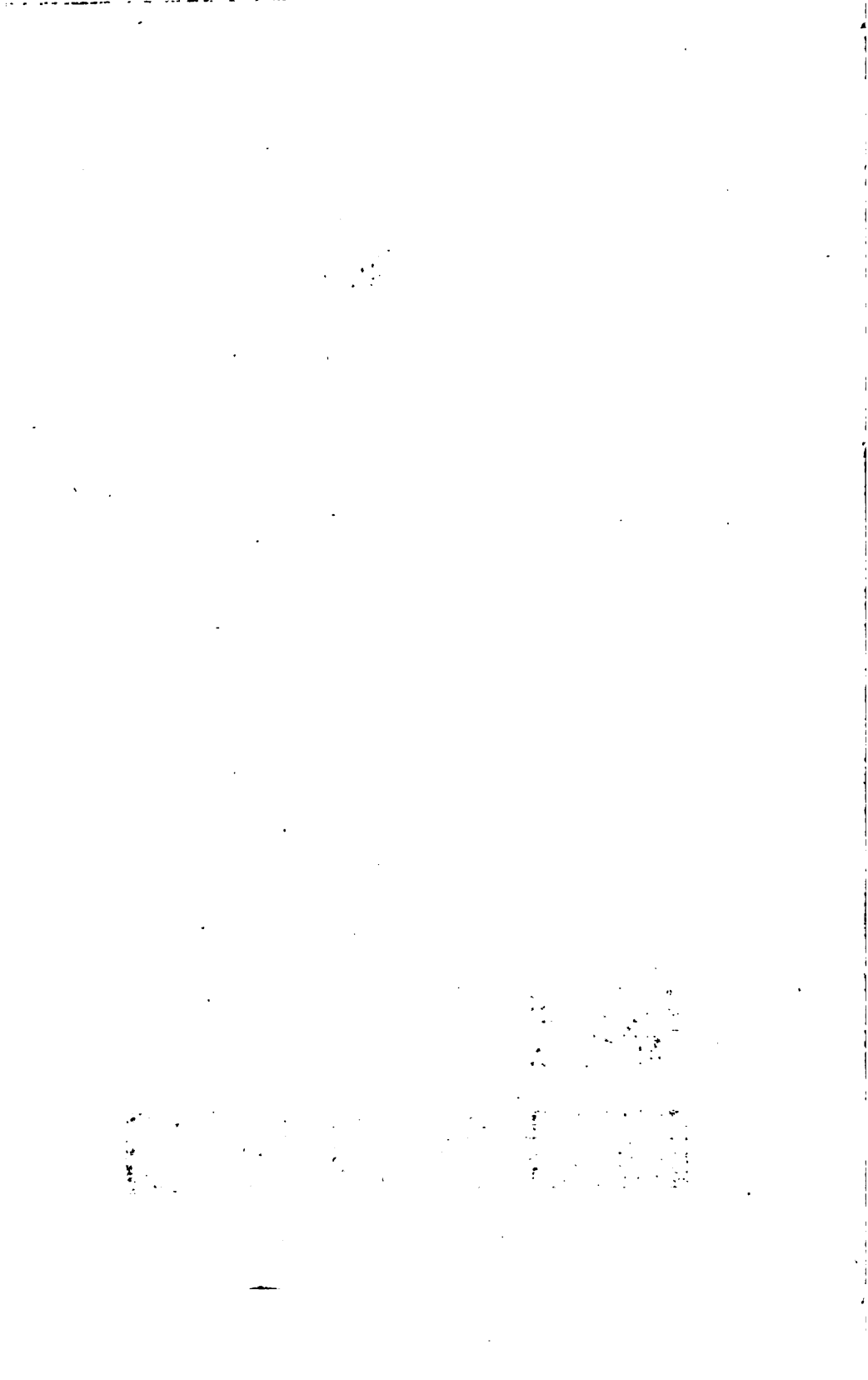
Roman-Green





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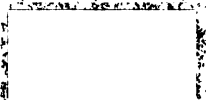
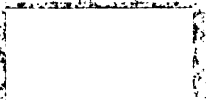
25. YG-Y.

27. G-Y.

29. GG-Y.



f

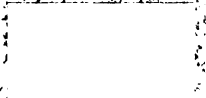
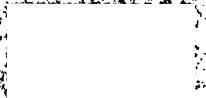


Pale Chalcedony Yellow

Pale Dull Green-Yellow

Pale Lumiere Green

d

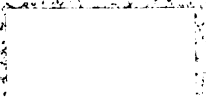


Light Chalcedony Yellow

Light Dull Green-Yellow

Light Lumiere Green

δ



Chalcedony Yellow

Clear Dull Green-Yellow

Lumiere Green

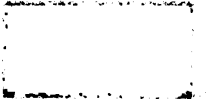


Bright Chalcedony Yellow

Dull Green-Yellow

\*Apple Green

i

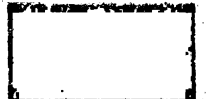


Courge Green

Biscay Green

Light Bice Green

k



Light Hellebore Green

Light Elm Green

\*Bice Green

m



Hellebore Green

Elm Green

Forest Green





1. The first part of the report is a general introduction to the subject of the study. It discusses the importance of the study and the objectives of the research. It also provides a brief overview of the methodology used in the study.

2. The second part of the report is a detailed description of the methodology used in the study. It discusses the data collection methods, the sample size, and the statistical analysis techniques used.

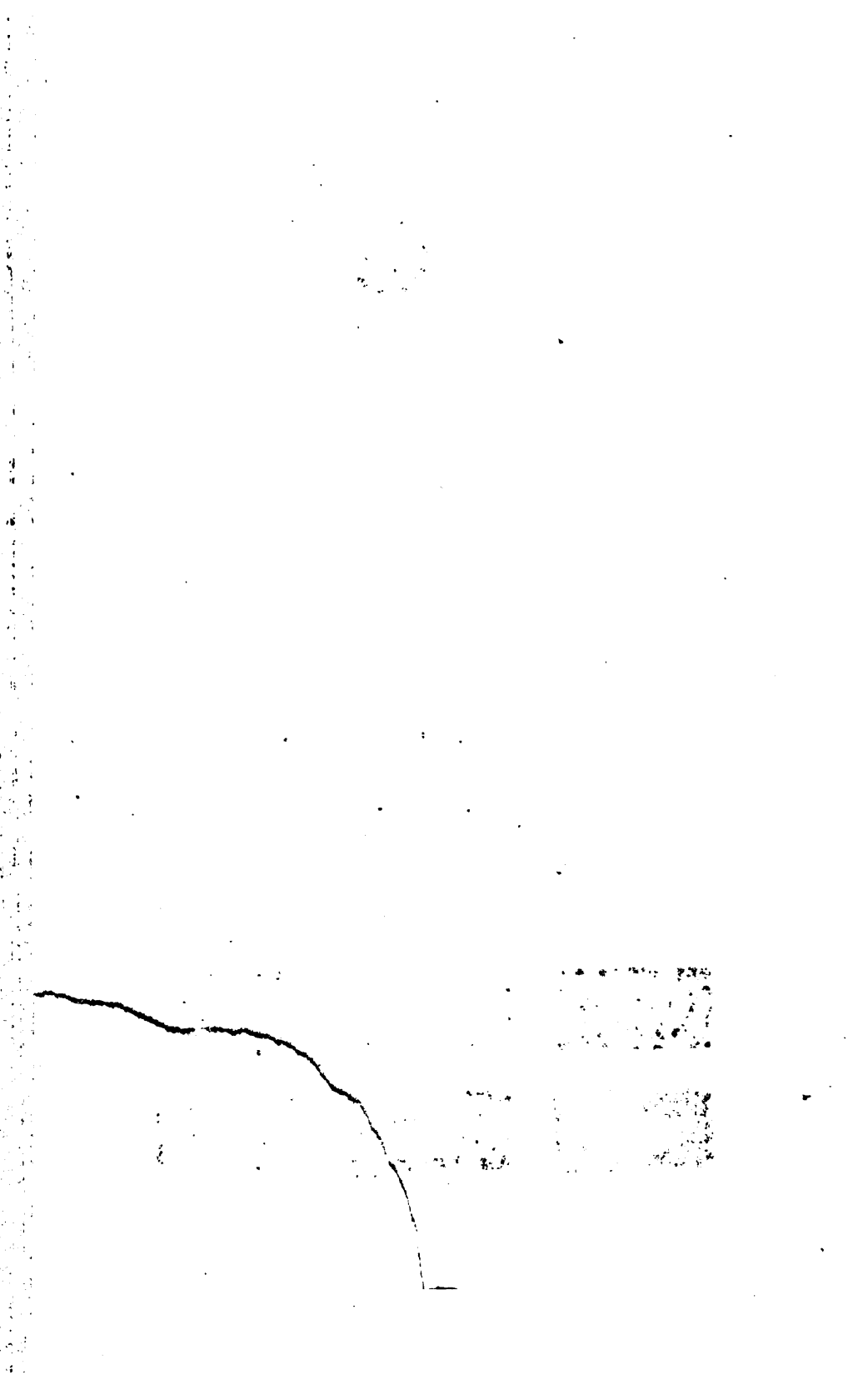
3. The third part of the report is a detailed description of the results of the study. It discusses the findings of the research and the conclusions drawn from the data.

4. The fourth part of the report is a discussion of the implications of the study. It discusses the practical applications of the findings and the limitations of the study.

5. The fifth part of the report is a conclusion. It summarizes the main findings of the study and provides a final statement on the importance of the research. It also includes a list of references and a list of figures and tables.

6. The sixth part of the report is a list of references. It includes a list of books, articles, and other sources used in the study. It also includes a list of figures and tables.

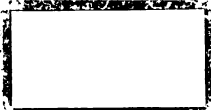
7. The seventh part of the report is a list of figures and tables. It includes a list of figures and tables used in the study. It also includes a list of figures and tables.



31'. Y-G.

33'. GY-G.

35'. GREEN



Pale Veronese Green

Pale Tiber Green

Oural Green



Veronese Green

Tiber Green

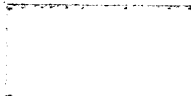
Light Paris Green



Rivage Green

Light Oriental Green

\*Paris Green



Mineral Green

Oriental Green

Motmot Green



Rinnemann's Green

Winter Green

Killarney Green



Civette Green

Hay's Green

Ackermann's Green



Varley's Green

Dark Yellowish Green

Dark Green







1. The first part of the report is a summary of the work done during the year.

2. The second part of the report is a detailed account of the work done during the year.

3. The third part of the report is a summary of the work done during the year.

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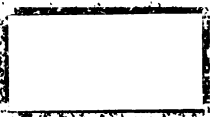
37. BB-G.



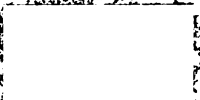
39. B-G.



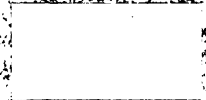
41. BB-G.



f



Dull Opaline Green

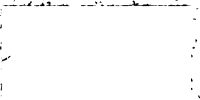


Microcline Green



Pale Nile Blue

d



Variscite Green



Pale Sulphate Green



\*Nile Blue

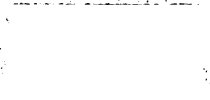
b



Cobalt Green



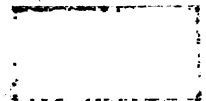
Light Sulphate Green



\*Beryl Green



\*Verdigris Green



Sulphate Green

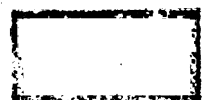


Methyl Green

z



Zinc Green



Dark Sulphate Green



\*Sea Green

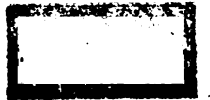
k



Dark Zinc Green



Dark Cinnabar Green



Prussian Green

m



\*Bottle Green



Duck Green



Invisible Green





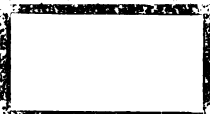




43' G-B.



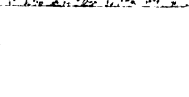
45' BG-B.



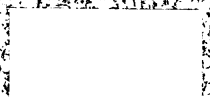
47' G-BB.



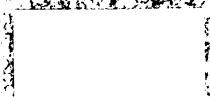
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Etain Blue



Persian Blue



Light Sky Blue

d'



Lumjere Blue



Light Squill Blue



Sky Blue

b



Bremen Blue



Squill Blue

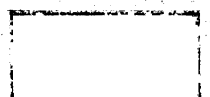


Yale Blue

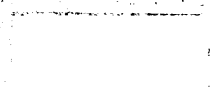
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Motmot Blue



Mathews' Blue

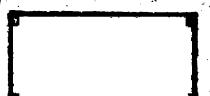


Olympic Blue

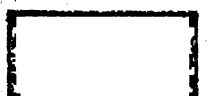
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Capri Blue



\*China Blue

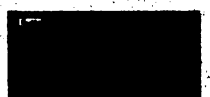


Vanderpoet's Blue

m



Jouvence Blue

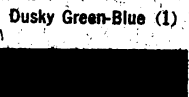


Chessylite Blue

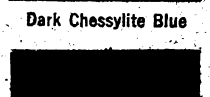


Blanc's Blue

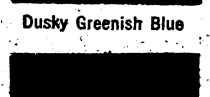
l



Dusky Green-Blue (1)



Dark Chessylite Blue



Dusky Greenish Blue







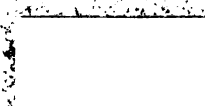
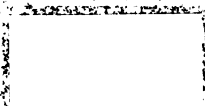
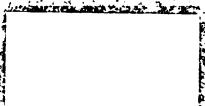
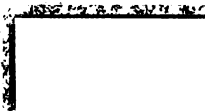
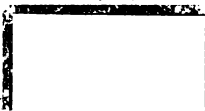


THE UNIVERSITY OF CHICAGO  
LIBRARY  
1100 EAST 58TH STREET  
CHICAGO, ILL. 60637

49. BLUE

51. BV-B.

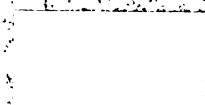
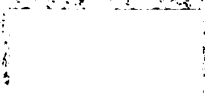
53. V-B.



Pale Grayish-Blue

Wedgewood Blue

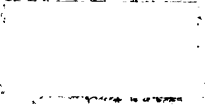
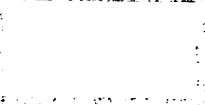
Light Lavender-Blue



Pale Cadet Blue

Deep Wedgewood Blue

Lavender-Blue



Light Cadet Blue

\*Flax-flower Blue

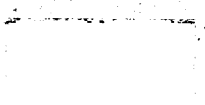
Deep Lavender-Blue



Clear Cadet Blue

Commelina Blue

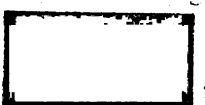
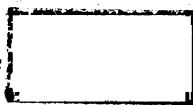
Cornflower Blue



Cadet Blue

Diva Blue

Gentian Blue



Deep Cadet Blue

Dark Diva Blue

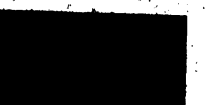
Sailor Blue



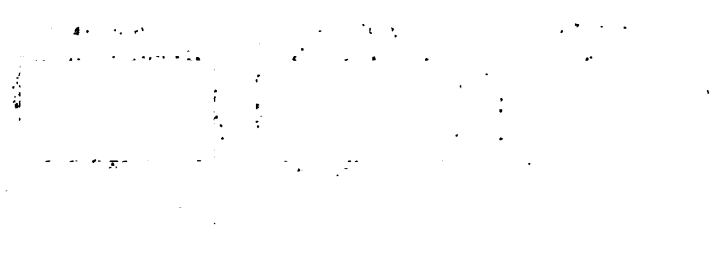
Dark Cadet Blue

Alizarine Blue

Navy Blue







Section 1: Introduction and Overview

This section provides a general overview of the project's goals and objectives. It outlines the scope of the work and the expected outcomes. The introduction also mentions the importance of the project and its relevance to the organization.

Section 2: Background and Context

This section discusses the background and context of the project. It provides information about the current state of the organization and the challenges it is facing. This section also includes a brief history of the project and the reasons for its initiation.

Section 3: Methodology and Approach

This section describes the methodology and approach used in the project. It details the research methods, data collection techniques, and the analytical tools used. The methodology section also discusses the limitations of the study and the potential for future research.

Section 4: Results and Findings

This section presents the results and findings of the project. It includes a detailed analysis of the data collected and the conclusions drawn from the study. The results section also discusses the implications of the findings for the organization and the field of study.

Section 5: Conclusion and Recommendations

This section provides a conclusion to the project and offers recommendations for future action. It summarizes the key findings and discusses the overall impact of the project. The conclusion also includes a list of recommendations for the organization and the field of study.

Section 6: Appendix and References

This section contains the appendix and references. The appendix includes additional data and information that supports the findings of the project. The references list the sources used in the project and provide a list of further reading.

1911

47\* G-BB.

49\* BLUE

51\* BV-B.



f

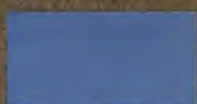


Pale King's Blue

Pale Neropaline Blue

Pale Forget-me-not Blue

d

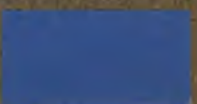
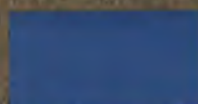
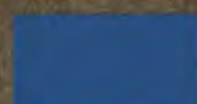


Light King's Blue

Light Neropaline Blue

Light Forget-me-not Blue

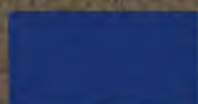
b



King's Blue

Neropaline Blue

Forget-me-not Blue



Venetian Blue

Ultramarine Ash

Dull Violaceous Blue

i



Jay Blue

Chapman's Blue

Grayish Violaceous Blue

k

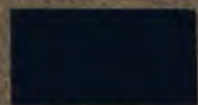
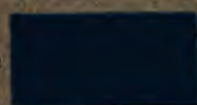


Gendarme Blue

Eton Blue

Deep Dull Violaceous Blue

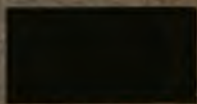
m



Hortense Blue

Dusky Blue

Indulin Blue





1. The first part of the report is a general introduction to the subject of the study. It discusses the importance of the study and the objectives of the research.

2. The second part of the report is a detailed description of the methodology used in the study. It includes information about the sample, the data collection methods, and the statistical analysis.

3. The third part of the report is a discussion of the results of the study. It compares the findings with the objectives of the research and discusses the implications of the results.

4. The fourth part of the report is a conclusion. It summarizes the main findings of the study and provides recommendations for future research.

5. The fifth part of the report is a list of references. It includes all the sources of information used in the study.

6. The sixth part of the report is an appendix. It contains additional information that is not included in the main body of the report.

7. The seventh part of the report is a glossary. It defines the key terms used in the study.

8. The eighth part of the report is a list of figures. It includes all the charts and graphs used in the study.

9. The ninth part of the report is a list of tables. It includes all the tables used in the study.

10. The tenth part of the report is a list of abbreviations. It includes all the abbreviations used in the study.

11. The eleventh part of the report is a list of acronyms. It includes all the acronyms used in the study.

12. The twelfth part of the report is a list of symbols. It includes all the symbols used in the study.

13. The thirteenth part of the report is a list of equations. It includes all the equations used in the study.

14. The fourteenth part of the report is a list of formulas. It includes all the formulas used in the study.

15. The fifteenth part of the report is a list of diagrams. It includes all the diagrams used in the study.

16. The sixteenth part of the report is a list of figures. It includes all the charts and graphs used in the study.

17. The seventeenth part of the report is a list of tables. It includes all the tables used in the study.

18. The eighteenth part of the report is a list of abbreviations. It includes all the abbreviations used in the study.

19. The nineteenth part of the report is a list of acronyms. It includes all the acronyms used in the study.

20. The twentieth part of the report is a list of symbols. It includes all the symbols used in the study.

21. The twenty-first part of the report is a list of equations. It includes all the equations used in the study.

22. The twenty-second part of the report is a list of formulas. It includes all the formulas used in the study.

23. The twenty-third part of the report is a list of diagrams. It includes all the diagrams used in the study.

24. The twenty-fourth part of the report is a list of figures. It includes all the charts and graphs used in the study.

25. The twenty-fifth part of the report is a list of tables. It includes all the tables used in the study.

26. The twenty-sixth part of the report is a list of abbreviations. It includes all the abbreviations used in the study.

27. The twenty-seventh part of the report is a list of acronyms. It includes all the acronyms used in the study.

28. The twenty-eighth part of the report is a list of symbols. It includes all the symbols used in the study.

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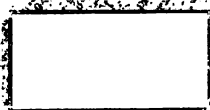


1914

55% B-V.

57% VB-V.

59% VIOLET



Pallid Soft Blue-Violet

Pale Wistaria Blue

Pale Wistaria Violet

*d*

Pale Soft Blue-Violet

Light Wistaria Blue

Light Wistaria Violet

*b*

Light Soft Blue-Violet

Wistaria Blue

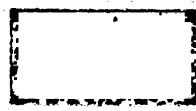
Wistaria Violet



Soft Blue-Violet

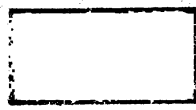


Soft Bluish Violet



Bradley's Violet

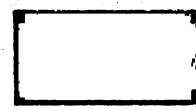
*i*



Deep Soft Blue-Violet

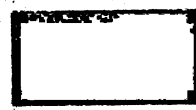


Deep Soft Bluish Violet

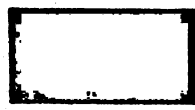


Dauphin's Violet

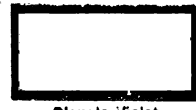
*k*



Dark Soft Blue-Violet



Dark Soft Bluish Violet



Blanc's Violet

*m*



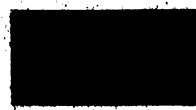
Dusky Violet-Blue (1)



Dusky Blue-Violet (1)



Dusky Violet





THE  
OFFICE OF THE  
ATTORNEY GENERAL  
OF THE STATE OF NEW YORK  
IN SENATE  
JANUARY 10, 1906

REPORT  
OF THE  
COMMISSIONER OF THE  
LAND OFFICE  
FOR THE YEAR  
1905

ALBANY:  
J. B. LIPPINCOTT & CO.,  
PRINTERS,  
1906.

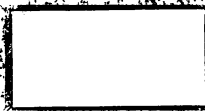
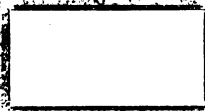
THE  
OFFICE OF THE  
ATTORNEY GENERAL  
OF THE STATE OF NEW YORK  
IN SENATE  
JANUARY 10, 1906



53°. V-B.

55°. B-V.

57°. VB-V.



Pallid Grayish Violet-Blue

Pale Campanula Blue

Light Chicory Blue



Pale Grayish Violet-Blue

Light Campanula Blue

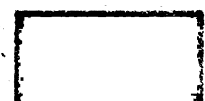
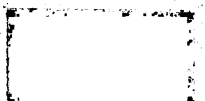
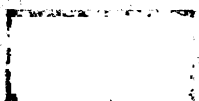
Chicory Blue



Light Grayish Violet-Blue

\*Campanula Blue

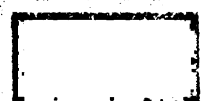
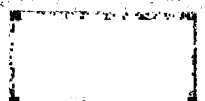
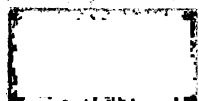
Deep Chicory Blue



Dull Violet-Blue

Dull Blue-Violet (1)

Dull Bluish Violet (1)



Grayish Violet-Blue

Grayish Blue-Violet (1)

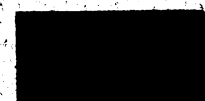
Deep Dull Bluish Violet (1)



Dark Dull Violet-Blue

Dark Grayish Blue-Violet

Dark Dull Bluish Violet (1)



Urania Blue

Dusky Blue-Violet (2)

\*Plum' Purple





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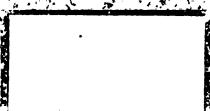


61'. VR-V.



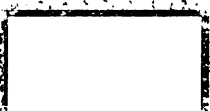
Pale Lavender-Violet

63'. R-V



Pale Mauve

65'. RR-V.

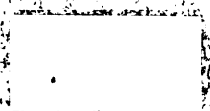


Mauvette

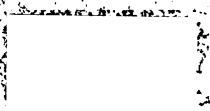
*a*



Light Lavender-Violet

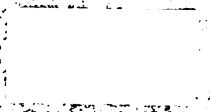


Light Mauve

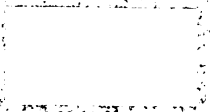


\*Lilac

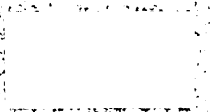
*b*



Lavender-Violet

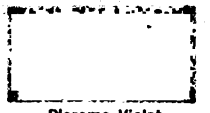


\*Mauve

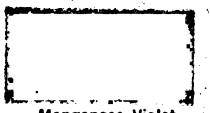


Chinese Violet

*i*



Pleroma Violet

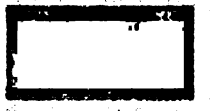


Manganese Violet



Mathews' Purple

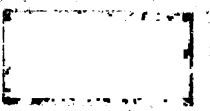
*k*



Haematuxylin Violet



Litho Purple



Petunia Violet

*m*



Anthracene Violet



Madder Violet



Nigrosin Violet



Dark Anthracene Violet



Dark Madder Violet



Dark Nigrosin Violet





1. The first part of the document is a list of names and addresses of the members of the committee. The names are listed in alphabetical order, and the addresses are given below each name. The list includes names such as Mr. A. B. C., Mr. D. E. F., and Mr. G. H. I.

2. The second part of the document is a list of the names of the members of the committee, followed by a list of the names of the members of the committee who are not listed in the first part. The names are listed in alphabetical order, and the addresses are given below each name.

3. The third part of the document is a list of the names of the members of the committee, followed by a list of the names of the members of the committee who are not listed in the first part. The names are listed in alphabetical order, and the addresses are given below each name.

4. The fourth part of the document is a list of the names of the members of the committee, followed by a list of the names of the members of the committee who are not listed in the first part. The names are listed in alphabetical order, and the addresses are given below each name.

5. The fifth part of the document is a list of the names of the members of the committee, followed by a list of the names of the members of the committee who are not listed in the first part. The names are listed in alphabetical order, and the addresses are given below each name.

6. The sixth part of the document is a list of the names of the members of the committee, followed by a list of the names of the members of the committee who are not listed in the first part. The names are listed in alphabetical order, and the addresses are given below each name.

7. The seventh part of the document is a list of the names of the members of the committee, followed by a list of the names of the members of the committee who are not listed in the first part. The names are listed in alphabetical order, and the addresses are given below each name.

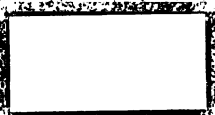
8. The eighth part of the document is a list of the names of the members of the committee, followed by a list of the names of the members of the committee who are not listed in the first part. The names are listed in alphabetical order, and the addresses are given below each name.

9. The ninth part of the document is a list of the names of the members of the committee, followed by a list of the names of the members of the committee who are not listed in the first part. The names are listed in alphabetical order, and the addresses are given below each name.

10. The tenth part of the document is a list of the names of the members of the committee, followed by a list of the names of the members of the committee who are not listed in the first part. The names are listed in alphabetical order, and the addresses are given below each name.



67'. V-R.



69'. RV-R.



71'. V-RR.



Pale Rose-Purple

Rosolane Pink

Cameo Pink

\*Rose-Purple

Pale Rosolane Purple

Thulite Pink

Liseran Purple

Light Rosolane Purple

Spinel Pink

\*Magenta

Rosolane Purple

Spinel Red

Dull Magenta Purple

Schoenfeld's Purple

Indian Lake

Dull Dark Purple

\*Auricula Purple

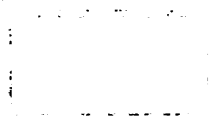
Dahlia Carmine

Dull Dusky Purple

Dusky Auricula Purple

Dark Maroon-Purple





THE

1800

1800

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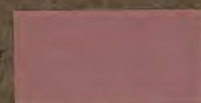
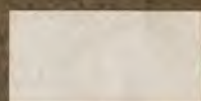




1". RED.

3". O-R.

5". OO-R.



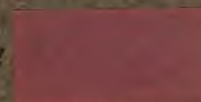
Pale Vinaceous



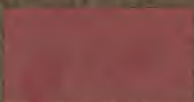
Livid Pink



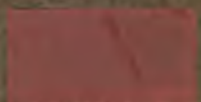
Hydrangea Pink



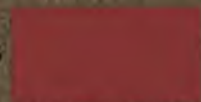
\*Vinaceous



Corinthian Pink



Pinkish Vinaceous



Deep Vinaceous



Light Corinthian Red



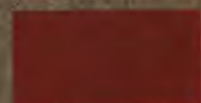
Orange-Vinaceous



Dark Vinaceous



Corinthian Red



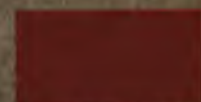
Etruscan Red



Hydrangea Red



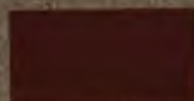
Deep Corinthian Red



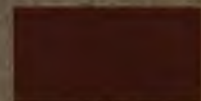
Ocher Red



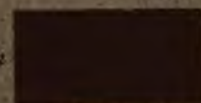
Mineral Red



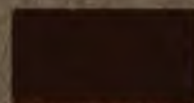
Indian Red



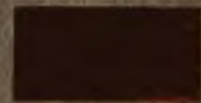
Prussian Red



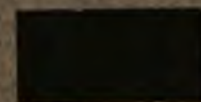
Dark Mineral Red



Dark Indian Red



Haematis Red





1. *Chlorophyll a* (Chl *a*) and *Chlorophyll b* (Chl *b*) were determined using the method of Arar and Collins (1987). The *Chlorophyll a* and *Chlorophyll b* contents were determined using the following equations:

$\frac{1}{2} \left( \frac{1}{2} + \frac{1}{2} \right) = \frac{1}{2}$

1. *Journal of the American Medical Association*, 1997; 277: 1039-1043.

[illegible]

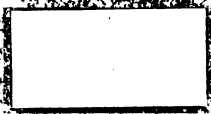
the 1990s, the number of people in the world who are under 15 years of age is expected to increase from 1.1 billion to 1.5 billion. The number of people aged 65 and over is expected to increase from 200 million to 400 million. The number of people aged 15 and over is expected to increase from 3.5 billion to 4.5 billion. The number of people aged 15 and over is expected to increase from 3.5 billion to 4.5 billion. The number of people aged 15 and over is expected to increase from 3.5 billion to 4.5 billion.

[illegible]

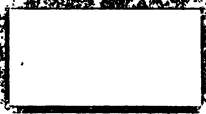
THE  
LIBRARY OF THE  
MUSEUM OF MODERN ART  
1000 MUSEUM AVENUE  
NEW YORK, N. Y. 10028

Plate XXVIII

7". R-O.



9". OR-O.



11". ORANGE



Pale Congo Pink



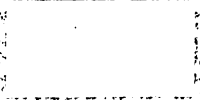
Pale Vinaceous-Pink



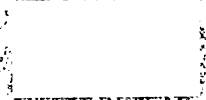
Shell Pink



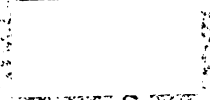
Light Congo Pink



\*Vinaceous-Pink



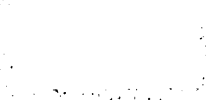
\*Buff-Pink



Congo Pink



Japan Rose



Onion-skin Pink



Terra Cotta



Testaceous



Vinaceous-Tawny



Vinaceous-Russet



Cacao Brown



Pecan Brown



Cameo Brown



\*Walnut Brown



Rood's Brown



\*Chocolate



\*Burnt Umber



\*Vandyke Brown







1941

1942

1943

1944

1945

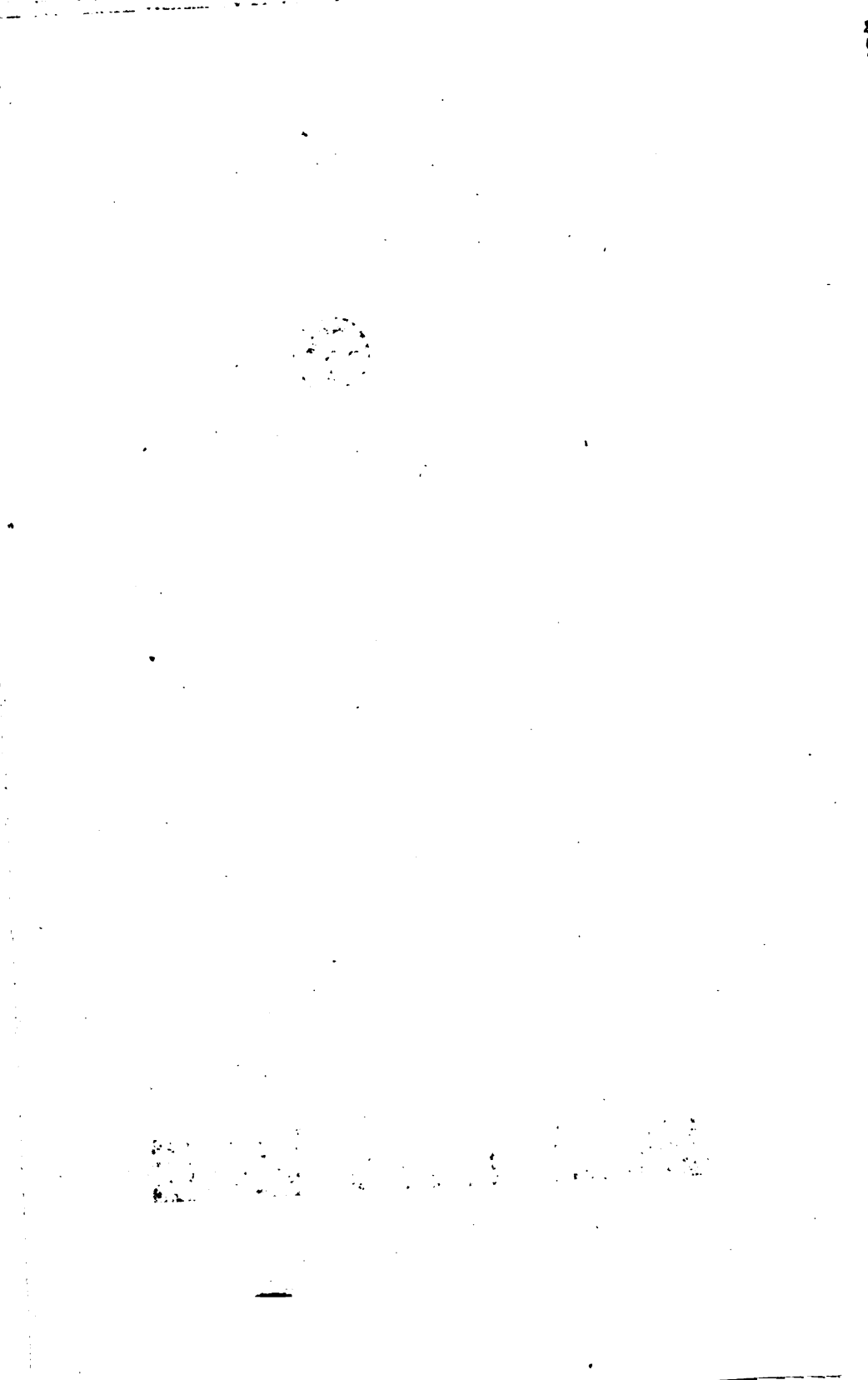
1946

1947

1948

1949

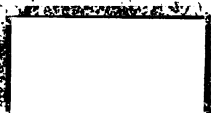




13". OY-O.

15". Y-O.

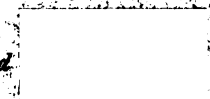
17". O-Y.



Pale Cinnamon-Pink

Pale Pinkish Cinnamon

Pale Pinkish Buff



Light Vinaceous-Cinnamon

Light Pinkish Cinnamon

\*Pinkish Buff



\*Vinaceous-Cinnamon

Pinkish Cinnamon

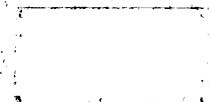
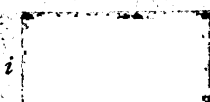
Cinnamon-Buff



Orange-Cinnamon

\*Cinnamon

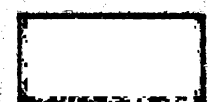
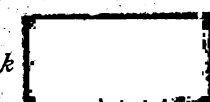
\*Clay Color



Mikado Brown

Sayal Brown

\*Tawny-Olive



Verona Brown

Snuff Brown

Saccardo's Umber



Warm Sepia

\*Bister

\*Sepia



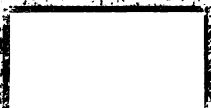




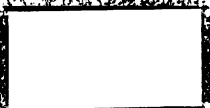
2

2011

19" YO-Y.



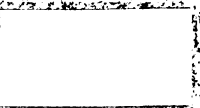
21" O-YY.



23" YELLOW



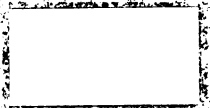
Cartridge Buff



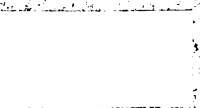
Ivory Yellow



Marguerite Yellow



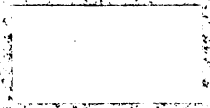
Cream-Buff



Colonial Buff



\*Primrose Yellow



Chambis



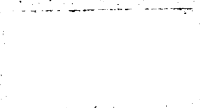
Deep Colonial Buff



Reed Yellow



Honey Yellow



Olive-Ocher



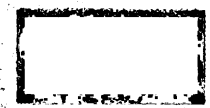
\*Olive Yellow



Isabella Color



Ecru-Olive



Light Yellowish Olive



Light Brownish Olive



Buffy Olive



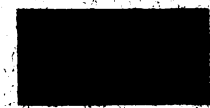
Yellowish Olive



Brownish Olive



\*Olive



Dark Greenish Olive





<p>1. <i>...</i></p> <p>2. <i>...</i></p> <p>3. <i>...</i></p>	<p>4. <i>...</i></p> <p>5. <i>...</i></p> <p>6. <i>...</i></p>	<p>7. <i>...</i></p> <p>8. <i>...</i></p> <p>9. <i>...</i></p>
<p>10. <i>...</i></p> <p>11. <i>...</i></p> <p>12. <i>...</i></p>	<p>13. <i>...</i></p> <p>14. <i>...</i></p> <p>15. <i>...</i></p>	<p>16. <i>...</i></p> <p>17. <i>...</i></p> <p>18. <i>...</i></p>
<p>19. <i>...</i></p> <p>20. <i>...</i></p> <p>21. <i>...</i></p>	<p>22. <i>...</i></p> <p>23. <i>...</i></p> <p>24. <i>...</i></p>	<p>25. <i>...</i></p> <p>26. <i>...</i></p> <p>27. <i>...</i></p>
<p>28. <i>...</i></p> <p>29. <i>...</i></p> <p>30. <i>...</i></p>	<p>31. <i>...</i></p> <p>32. <i>...</i></p> <p>33. <i>...</i></p>	<p>34. <i>...</i></p> <p>35. <i>...</i></p> <p>36. <i>...</i></p>
<p>37. <i>...</i></p> <p>38. <i>...</i></p> <p>39. <i>...</i></p>	<p>40. <i>...</i></p> <p>41. <i>...</i></p> <p>42. <i>...</i></p>	<p>43. <i>...</i></p> <p>44. <i>...</i></p> <p>45. <i>...</i></p>
<p>46. <i>...</i></p> <p>47. <i>...</i></p> <p>48. <i>...</i></p>	<p>49. <i>...</i></p> <p>50. <i>...</i></p> <p>51. <i>...</i></p>	<p>52. <i>...</i></p> <p>53. <i>...</i></p> <p>54. <i>...</i></p>
<p>55. <i>...</i></p> <p>56. <i>...</i></p> <p>57. <i>...</i></p>	<p>58. <i>...</i></p> <p>59. <i>...</i></p> <p>60. <i>...</i></p>	<p>61. <i>...</i></p> <p>62. <i>...</i></p> <p>63. <i>...</i></p>
<p>64. <i>...</i></p> <p>65. <i>...</i></p> <p>66. <i>...</i></p>	<p>67. <i>...</i></p> <p>68. <i>...</i></p> <p>69. <i>...</i></p>	<p>70. <i>...</i></p> <p>71. <i>...</i></p> <p>72. <i>...</i></p>
<p>73. <i>...</i></p> <p>74. <i>...</i></p> <p>75. <i>...</i></p>	<p>76. <i>...</i></p> <p>77. <i>...</i></p> <p>78. <i>...</i></p>	<p>79. <i>...</i></p> <p>80. <i>...</i></p> <p>81. <i>...</i></p>





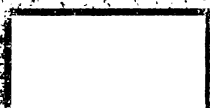
25". YG-Y.



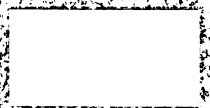
27". G-Y.



29". GG-Y.



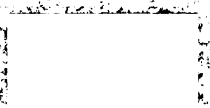
Sea-foam Yellow



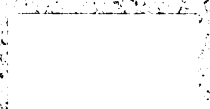
Sea-foam Green



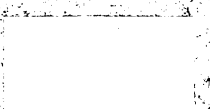
Pale Glass Green



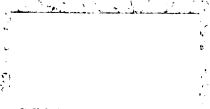
Chartreuse Yellow



Deep Sea-foam Green



Glass Green



Citron Green



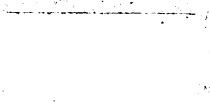
Chrysolite Green



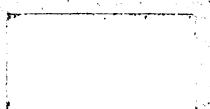
Kildare Green



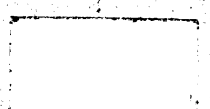
Lime Green



Deep Chrysolite Green



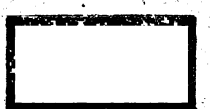
Absinthe Green



Mignonette Green



Rainette Green



Light Cress Green



Kronberg's Green



Jade Green



Cress Green



Ivy Green



Yew Green



Dark Cress Green





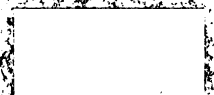
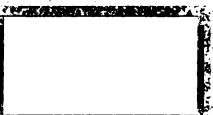
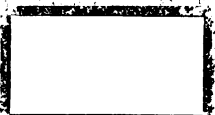
1. 1. 1.	1. 1. 1.	1. 1. 1.
1. 1. 2.	1. 1. 2.	1. 1. 2.
1. 1. 3.	1. 1. 3.	1. 1. 3.
1. 1. 4.	1. 1. 4.	1. 1. 4.
1. 1. 5.	1. 1. 5.	1. 1. 5.
1. 1. 6.	1. 1. 6.	1. 1. 6.
1. 1. 7.	1. 1. 7.	1. 1. 7.
1. 1. 8.	1. 1. 8.	1. 1. 8.
1. 1. 9.	1. 1. 9.	1. 1. 9.
1. 1. 10.	1. 1. 10.	1. 1. 10.
1. 1. 11.	1. 1. 11.	1. 1. 11.
1. 1. 12.	1. 1. 12.	1. 1. 12.
1. 1. 13.	1. 1. 13.	1. 1. 13.
1. 1. 14.	1. 1. 14.	1. 1. 14.
1. 1. 15.	1. 1. 15.	1. 1. 15.
1. 1. 16.	1. 1. 16.	1. 1. 16.
1. 1. 17.	1. 1. 17.	1. 1. 17.
1. 1. 18.	1. 1. 18.	1. 1. 18.
1. 1. 19.	1. 1. 19.	1. 1. 19.
1. 1. 20.	1. 1. 20.	1. 1. 20.
1. 1. 21.	1. 1. 21.	1. 1. 21.
1. 1. 22.	1. 1. 22.	1. 1. 22.
1. 1. 23.	1. 1. 23.	1. 1. 23.
1. 1. 24.	1. 1. 24.	1. 1. 24.
1. 1. 25.	1. 1. 25.	1. 1. 25.
1. 1. 26.	1. 1. 26.	1. 1. 26.
1. 1. 27.	1. 1. 27.	1. 1. 27.
1. 1. 28.	1. 1. 28.	1. 1. 28.
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1. 1. 30.	1. 1. 30.	1. 1. 30.
1. 1. 31.	1. 1. 31.	1. 1. 31.
1. 1. 32.	1. 1. 32.	1. 1. 32.
1. 1. 33.	1. 1. 33.	1. 1. 33.
1. 1. 34.	1. 1. 34.	1. 1. 34.
1. 1. 35.	1. 1. 35.	1. 1. 35.
1. 1. 36.	1. 1. 36.	1. 1. 36.
1. 1. 37.	1. 1. 37.	1. 1. 37.

1919 1920 1921

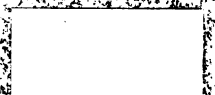
31". Y-G.

33". GY-G.

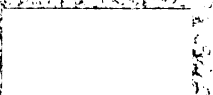
35". GREEN



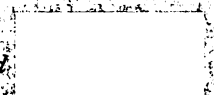
Pale Turtle Green



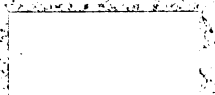
Pale Fluorite Green



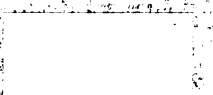
Pale Olivine



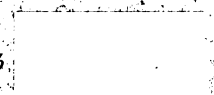
Light Turtle Green



Light Fluorite Green



Olivine



Turtle Green



Clear Fluorite Green



\*Malachite Green



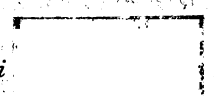
Deep Turtle Green



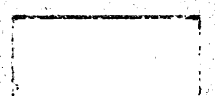
Fluorite Green



Deep Malachite Green



\*Chromium Green



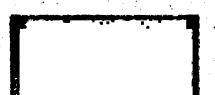
Shamrock Green



\*French Green



Deep Dull Yellow-Green (1)



Deep Dull Yellow-Green (2)



Light Danube Green



Dark Dull Yellow-Green



Empire Green



Danube Green





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1918

1919

1920

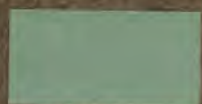
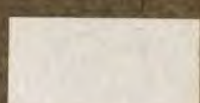
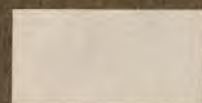
1921

1922

37". GB-G.

39". B-G.

41". BB-G.



Lichen Green



Pale Glaucous-Green



Pale Niagara Green



Deep Lichen Green



\*Glaucous-Green



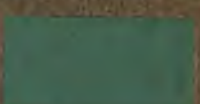
Light Niagara Green



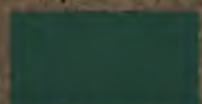
Refine Green



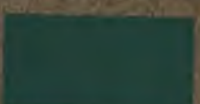
Deep Glaucous-Green



Niagara Green



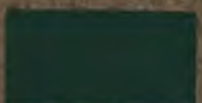
Montpellier Green



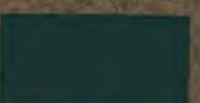
Light Porcelain Green



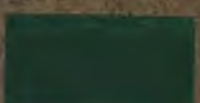
Light Terre Verte



Jasper Green



Porcelain Green



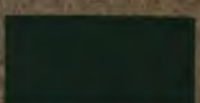
\*Terre Verte



Nickel Green



Dark Porcelain Green



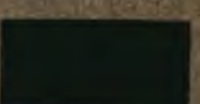
Dark Terre Verte



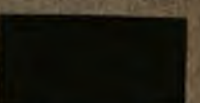
Dusky Green



Dusky Blue-Green



Dusky Bluish Green







THE [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

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[illegible]

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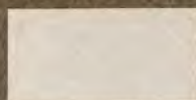
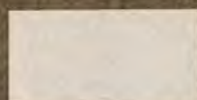
[illegible text block]



43", G-B.

45", BG-B.

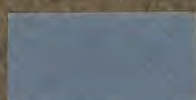
47", G-BB.



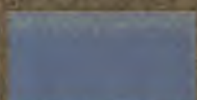
*f*



Pale Glaucous-Blue

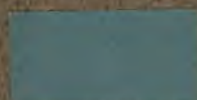


Sky Gray.

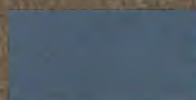


Burn Blue

*d*



Light Glaucous-Blue

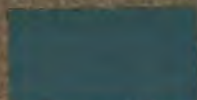


Light Alice Blue

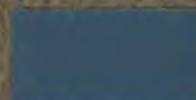


Light Columbia Blue

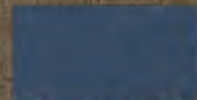
*b*



\*Glaucous-Blue



Alice Blue



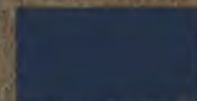
Columbia Blue



Porcelain Blue



Orient Blue

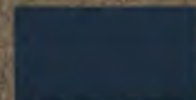


Light Tyrian Blue

*t*



Gobelin Blue



Deep Orient Blue

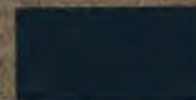


Tyrian Blue

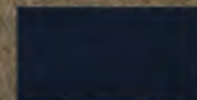
*k*



Dark Gobelin Blue

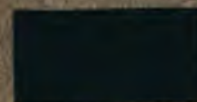


Dark Orient Blue

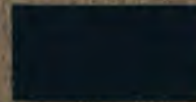


Dark Tyrian Blue

*772*



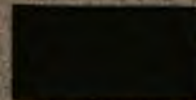
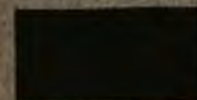
Dusky Green Blue (2)



Dusky Orient Blue



\*Indigo Blue







[illegible]

• • • • •

the 1990s, the number of people in the world who are under 15 years of age is expected to increase from 1.1 billion to 1.5 billion. The number of people aged 65 and over is expected to increase from 200 million to 400 million. The number of people aged 15 and over is expected to increase from 3.5 billion to 4.5 billion. The number of people aged 15 and over is expected to increase from 3.5 billion to 4.5 billion. The number of people aged 15 and over is expected to increase from 3.5 billion to 4.5 billion.

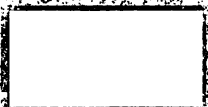
[illegible]

1. The first step in the process is to identify the problem or issue that needs to be addressed. This involves gathering information and understanding the context of the problem.



[illegible]

49". BLUE



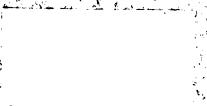
51". BV-B.



53". V-B.



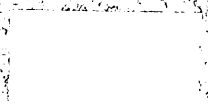
\*Pearl Blue



Pale Grayish Blue-Violet



Pale Aniline Lilac



d

Pale Windsor Blue



Light Grayish Blue-Violet



Aniline Lilac



b

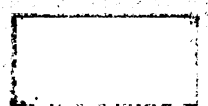
Light Windsor Blue



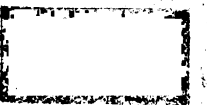
Grayish Blue-Violet (2)



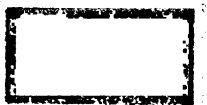
Deep Aniline Lilac



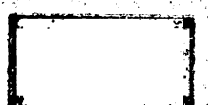
Clear Windsor Blue



Dull Bluish Violet (2)



Dull Violet-Blue



z

Windsor Blue



Deep Dull Bluish Violet (2)



Deep Dull Violet-Blue



k

Acetin Blue



Dark Dull Bluish Violet (2)



Dark Dull Violet-Blue



m

Nigrosin Blue



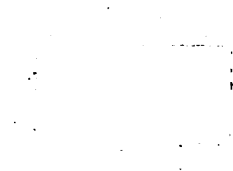
Diamin-Azo Blue



Dusky Dull Violet-Blue







100

100

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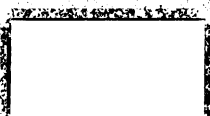
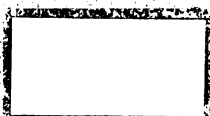
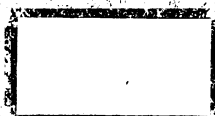


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LIBRARY

55". B-V.

57". VB-V.

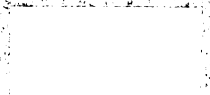
59". VIOLET



Pale Verbena Violet

Pale Bluish Lavender

\*Lavender



Verbena Violet

Bluish Lavender

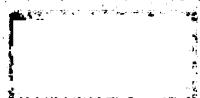
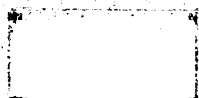
Deep Lavender



Ontario Violet

Light Dull Bluish Violet

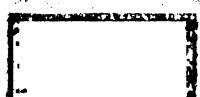
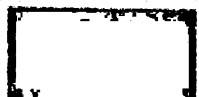
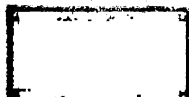
Light Hyssop Violet



Vanderpoel's Violet

Dull Bluish Violet (3)

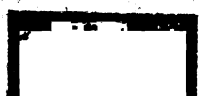
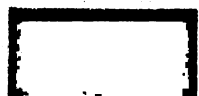
Hyssop Violet



Dull Blue-Violet (2)

Deep Dull Bluish Violet (3)

Deep Hyssop Violet



Yvette Violet

Dark Dull Bluish Violet (3)

Dark Hyssop Violet



Dark Yvette Violet

Dusky Dull Violet (1)

Dusky Dull Violet (2)





[illegible][illegible][illegible]



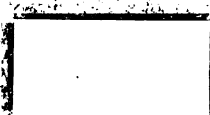
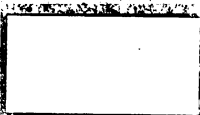


1924

61" VR-V.

63" R-V.

65" RR-V.



Pale Lobelia Violet

Pale Lilac

Light Pinkish Lilac

d.

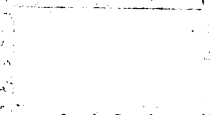
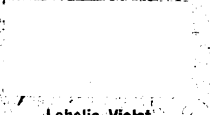


Light Lobelia Violet

Hay's Lilac

Purplish Lilac

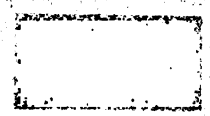
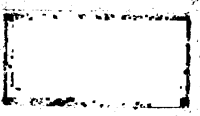
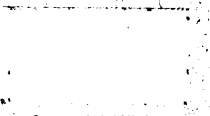
b.



Lobelia Violet

Ageratum Violet

Argyle Purple

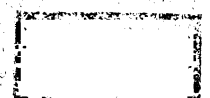
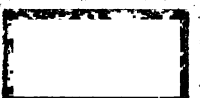
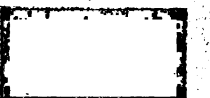


Saccardo's Violet

Aconite Violet

Bishop's Purple

i.



Livid Violet

Livid Purple

Light Perilla Purple

k.

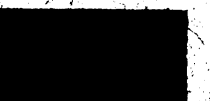


Naphthalene Violet

Deep Livid Purple

Perilla Purple

m.



Dark Naphthalene Violet

Dark Livid Purple

Dark Perilla Purple





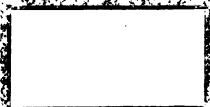




67" V-R



69" RV-R



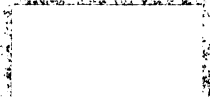
71" V-RR



f



Pale Laelia Pink



Pale Persian Lilac



Pale Rhodonite Pink

d



Laelia Pink



Persian Lilac



Rhodonite Pink

b



Tourmaline Pink



Daphne Pink

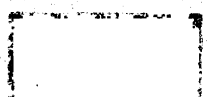


Rocellin Purple

i



Eupatorium Purple



Daphne Red



Hellebore Red

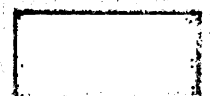
k



Vinaceous-Purple



Vernonia Purple



Deep Hellebore Red

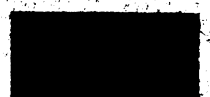
m



Dark Vinaceous-Purple



Corinthian Purple



Neutral Red



\*Indian Purple



Dark Corinthian Purple



Mars Violet





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530 SOUTH EAST ASIAN AVENUE  
CHICAGO, ILLINOIS 60607

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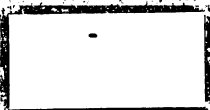
DEPARTMENT OF CHEMISTRY  
530 SOUTH EAST ASIAN AVENUE  
CHICAGO, ILLINOIS 60607





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WASHINGTON, D. C.

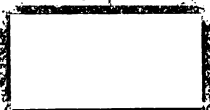
1" RED



5" OO-R.



9" OR-O.



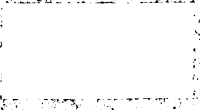
Pale Purplish Vinaceous



Pale Brownish Vinaceous



Pale Grayish Vinaceous



Light Purplish Vinaceous



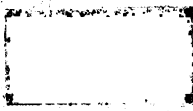
Light Brownish Vinaceous



Light Grayish Vinaceous



Purplish Vinaceous



Brownish Vinaceous



Light Russet-Vinaceous



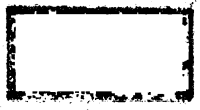
Livid Brown



Deep Brownish Vinaceous



Russet-Vinaceous



Deep Livid Brown



Vinaceous-Brown



Sorghum Brown



Dark Livid Brown



Dark Vinaceous-Brown



Hay's Brown



Warm Blackish Brown



\*Seal Brown



Light Seal Brown





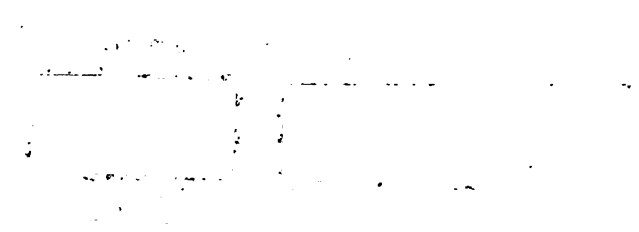


Fig. 1. Schematic diagram of the pump assembly.

The pump assembly consists of a central vertical shaft (D) which is connected to a horizontal shaft (C). The horizontal shaft (C) is connected to a vertical shaft (B) which is connected to a component (A) at the top. The component (A) is a pump head which is connected to a pump body (B). The pump body (B) is connected to a pump shaft (C) which is connected to a pump impeller (D). The pump impeller (D) is connected to a pump housing (E) at the bottom.

The pump assembly is shown in Fig. 1. The pump head (A) is connected to the pump body (B) by a pump shaft (C). The pump body (B) is connected to the pump shaft (C) by a pump impeller (D). The pump impeller (D) is connected to the pump housing (E) at the bottom.

The pump assembly is shown in Fig. 1. The pump head (A) is connected to the pump body (B) by a pump shaft (C). The pump body (B) is connected to the pump shaft (C) by a pump impeller (D). The pump impeller (D) is connected to the pump housing (E) at the bottom.

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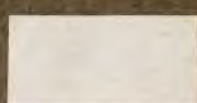
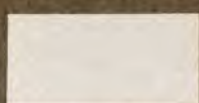
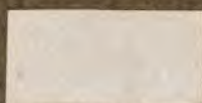


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CHICAGO

13" OY-O.

17" O.Y.

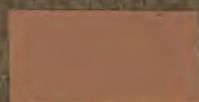
21" O.YY.



Pale Vinaceous-Fawn

Tulleut-Buff

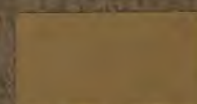
Pale Olive-Buff



Light Vinaceous-Fawn

\*Vinaceous-Buff

\*Olive-Buff



Vinaceous-Fawn

Avellaneous

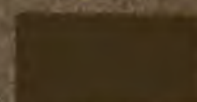
Deep Olive-Buff



\*Fawn Color

\*Wood Brown

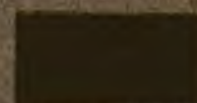
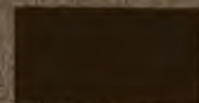
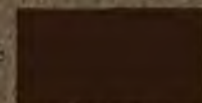
Dark Olive-Buff



Army Brown

Buffy Brown

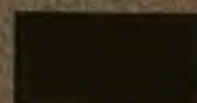
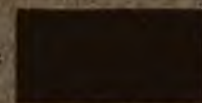
Drab-Drab



Natal Brown

Olive Brown

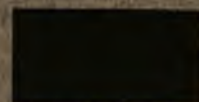
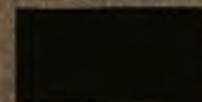
Deep Olive



Bone Brown

\*Clove Brown

Dark Olive







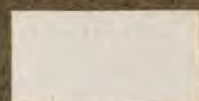
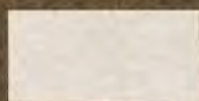




25<sup>m</sup>. YG-Y.

29<sup>m</sup>. GG-Y.

33<sup>m</sup>. GY-G.



Yellowish Glauous

Glauous

Greenish Glauous



Water Green

Corydalis Green

Deep Greenish Glauous



Light Grape Green

Mytho Green

Dark Greenish Glauous



Grape Green

Asphodel Green

Pistachio Green



Deep Grape Green

Pois Green

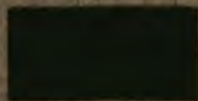
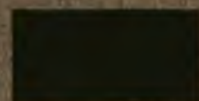
American Green



Lincoln Green

Last Green

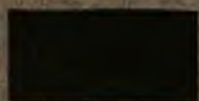
Dark American Green



Dusky Olive-Green

Dusky Yellowish Green

Dull Blackish Green





1. The first part of the report is a general introduction to the subject of the study. It discusses the importance of the problem and the objectives of the research.

2. The second part of the report is a detailed description of the methods used in the study. It includes a discussion of the experimental design, the data collection procedures, and the statistical analysis techniques.

3. The third part of the report is a presentation of the results of the study. It includes a discussion of the findings, a comparison of the results with previous research, and a conclusion about the significance of the study.

4. The fourth part of the report is a discussion of the implications of the study. It includes a discussion of the practical applications of the findings, a discussion of the limitations of the study, and a discussion of the directions for future research.

5. The fifth part of the report is a summary of the study. It includes a brief overview of the main findings and a final conclusion about the significance of the study.

6. The sixth part of the report is a list of references. It includes a list of the books, articles, and other sources that were used in the study.

7. The seventh part of the report is an appendix. It includes a list of the tables, figures, and other supplementary material that are included in the report.

8. The eighth part of the report is a list of abbreviations. It includes a list of the abbreviations that are used in the report.

9. The ninth part of the report is a list of symbols. It includes a list of the symbols that are used in the report.

10. The tenth part of the report is a list of footnotes. It includes a list of the footnotes that are included in the report.

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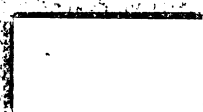
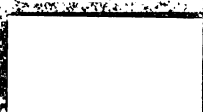
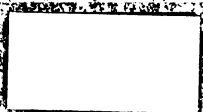
13. The thirteenth part of the report is an appendix. It includes a list of the tables, figures, and other supplementary material that are included in the report.



37''' GB-G.

41''' BB-G.

45''' BG-B.



Bluish Glaucous

Pale Dull Glaucous-Blue

Pale Russian Blue

d

Deep Bluish Glaucous

Light Dull Glaucous-Blue

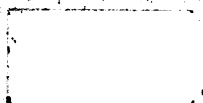
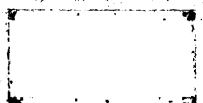
Russian Blue

b

Dark Bluish Glaucous

Greenish Glaucous-Blue

Cadet Gray

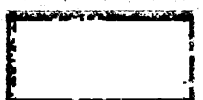


Stone Green

Bluish Gray-Green

Parula Blue

t



Russian Green

Deep Bluish Gray-Green

Delft Blue

k



Dark Russian Green

Dark Bluish Gray-Green

Deep Delft Blue

m



Dusky Dull Green

Dusky Dull Bluish Green

Dark Delft Blue





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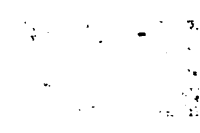
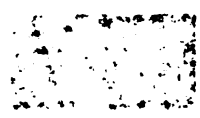
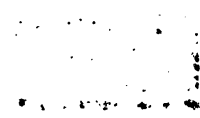
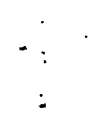


Plate XLIII

49''' BLUE



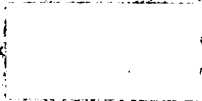
53''' V-B.



57''' VB-V.



\*Lavender Gray



Plumbago Blue



Grayish Lavender



Endive Blue



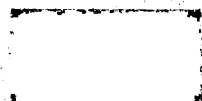
Deep Plumbago Blue



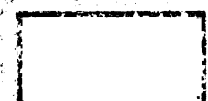
Deep Grayish Lavender



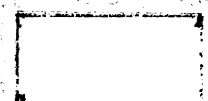
Dutch Blue



Dark Plumbago Blue



Dark Grayish Lavender



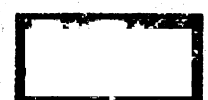
Deep Dutch Blue



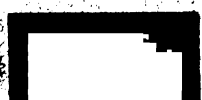
Madder Blue



Ramier Blue



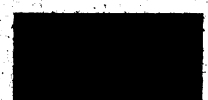
Slate-Blue



Deep Madder Blue



Slate-Violet (1)



Deep Slate-Blue



Dark Madder Blue



Dark Slate-Violet (1)



Dusky Slate-Blue



Dusky Violet-Blue (2)

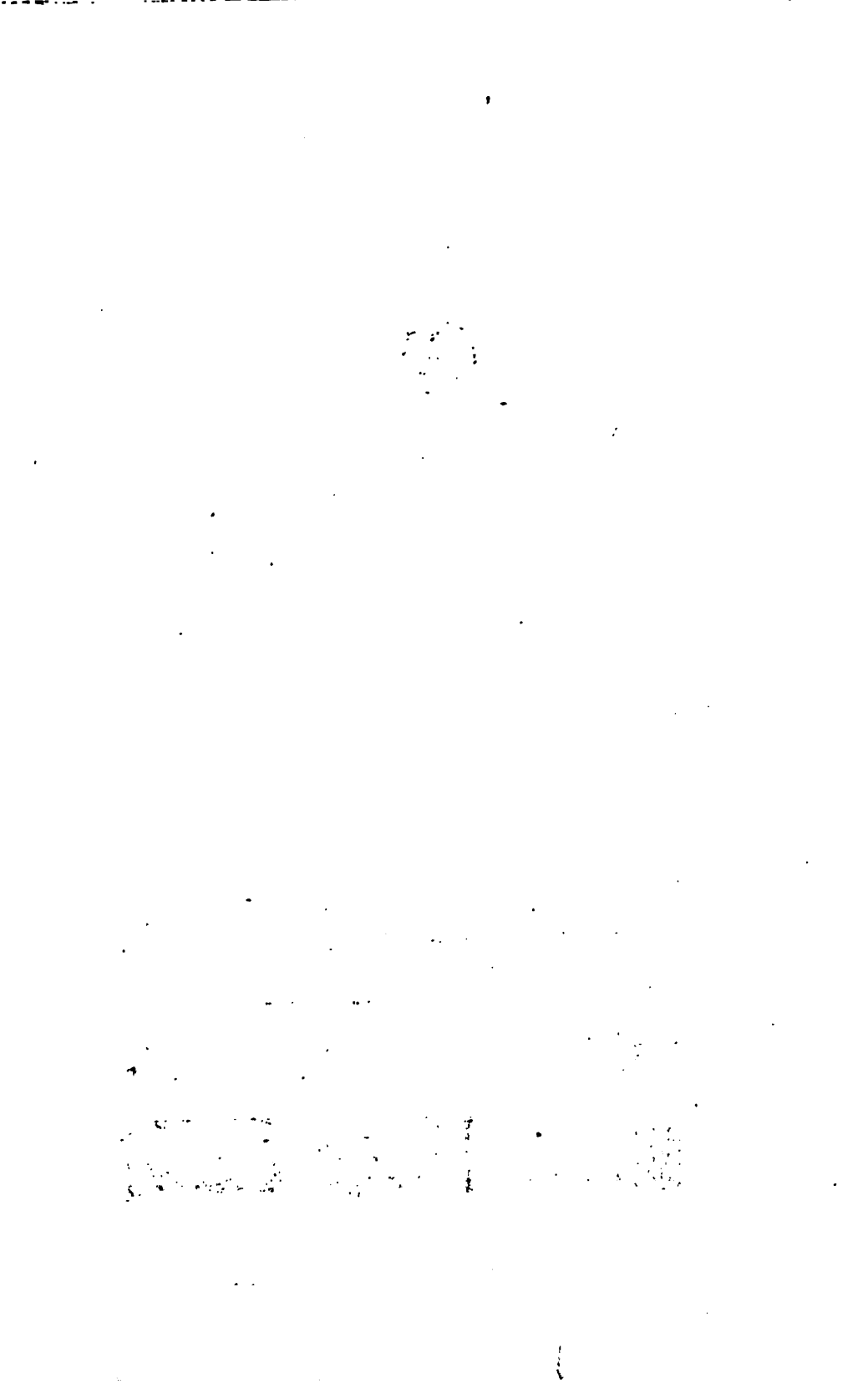


Dusky Slate-Violet





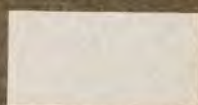
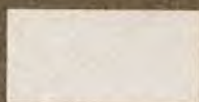




61'' VR-V.

65'' RR-V.

69'' RV-R.



Dull Lavender



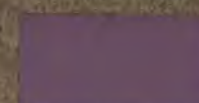
Vinaceous-Lavender



Pale Vinaceous-Lilac



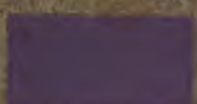
Deep Dull Lavender



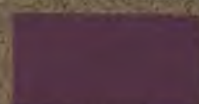
Deep Vinaceous-Lavender



Light Vinaceous-Lilac



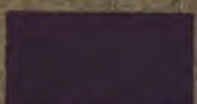
Dark Lavender



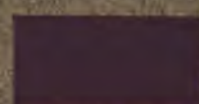
Light Vinaceous-Purple



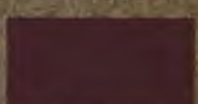
Vinaceous-Lilac



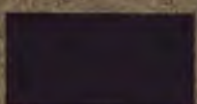
Slate-Violet (2)



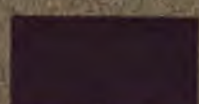
Vinaceous-Purple



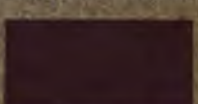
Deep Purplish-Vinaceous



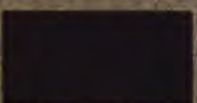
Deep Slate-Violet



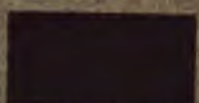
Slate-Purple



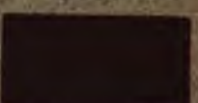
Dull Indian Purple



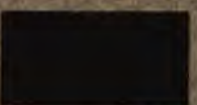
Dark Slate-Violet (2)



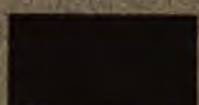
Dark Slate-Purple



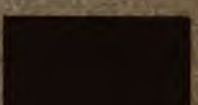
Anthracene Purple



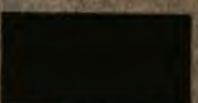
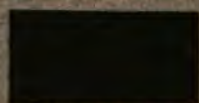
Dull Violet-Black (1)



Raisin Black



Taupe Brown





1. The first part of the report is a general  
 introduction to the subject of the study.  
 2. The second part is a description of the  
 methods used in the study.  
 3. The third part is a description of the  
 results of the study.  
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9. The ninth part is a list of appendices.  
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11. The eleventh part is a list of symbols.  
 12. The twelfth part is a list of abbreviations.

13. The thirteenth part is a list of definitions.  
 14. The fourteenth part is a list of acronyms.

15. The fifteenth part is a list of terms.  
 16. The sixteenth part is a list of phrases.

17. The seventeenth part is a list of sentences.  
 18. The eighteenth part is a list of paragraphs.

19. The nineteenth part is a list of chapters.  
 20. The twentieth part is a list of sections.

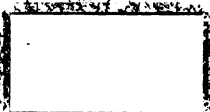
21. The twenty-first part is a list of subsections.  
 22. The twenty-second part is a list of subsubsections.





1	2	3
4	5	6
7	8	9
10	11	12

1" RED



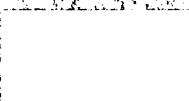
5" OO-R



9" OR-O



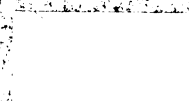
f



Pallid Purple-Drab



Pallid Vinaceous-Drab



Pallid Brownish Drab

d



Pale Purple-Drab



Pale Vinaceous-Drab

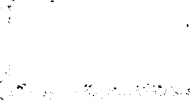


Pale Brownish Drab

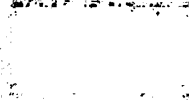
b



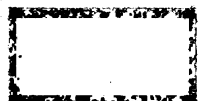
Light Purple-Drab



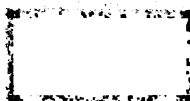
Light Vinaceous-Drab



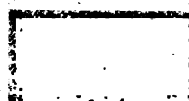
Light Brownish Drab



Purple-Drab



Vinaceous-Drab



Brownish Drab

i



Dark Purple-Drab



Dark Vinaceous-Drab



Deep Brownish Drab

k



Dusky Brown



Dark Grayish Brown



Dusky Drab

m



Blackish Brown (1)



Blackish Brown (2)



Blackish Brown (3)





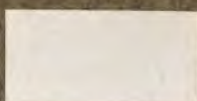
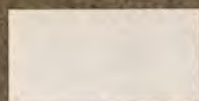


2000 2000 2000  
2000 2000 2000

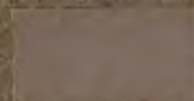
13<sup>mm</sup>. OY-D.

17<sup>mm</sup>. O-Y.

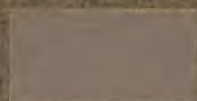
21<sup>mm</sup>. O-YY.



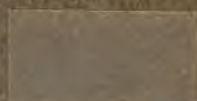
*f*



Pale Ecri-Drab



Pale Drab-Gray

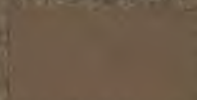


Pale Smoke Gray

*d*



\*Ecri-Drab

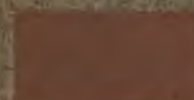


\*Drab-Gray



\*Smoke Gray

*b*



Light Cinnamon-Drab



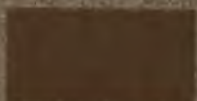
Light Drab



Light Grayish Olive



Cinnamon-Drab

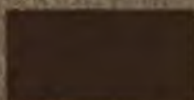


\*Drab

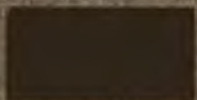


Grayish Olive

*r*



Benzo Brown

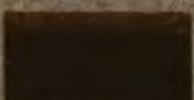


\*Hair Brown



Deep Grayish Olive

*k*



Fuscous



Chestura Drab

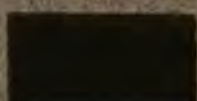


Dark Grayish Olive

*m*



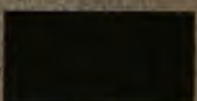
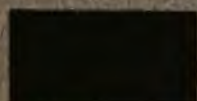
Fuscous-Black



Chestura Black



Olivaceous Black (1)





# REPORT

DATE

TO THE DIRECTOR  
OF THE BUREAU OF  
THE ARMY

FROM THE  
OFFICE OF THE  
CHIEF OF THE  
BUREAU OF THE ARMY

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100

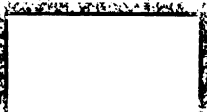
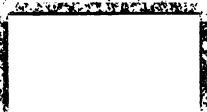
100

Plate XLVII

25''' YG-Y.

29''' GG-Y.

33''' GY-G.



f



Light Mineral Gray



Court Gray



Puritan Gray

d



Mineral Gray



Ghabalum Green



Light Celandine Green

b



Tea Green



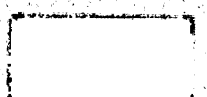
\*Pea Green



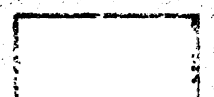
Celandine Green



Vetiver Green



\*Sage Green

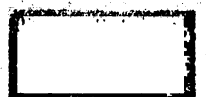


Artemisia Green

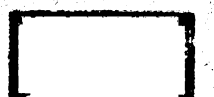
i



Andover Green



Slate-Olive



Lily Green

k



Dark Ivy Green



Deep Slate-Olive



Deep Slate-Green

m



Olivaceous Black (2)



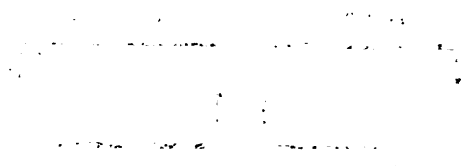
Dull Greenish Black (1)

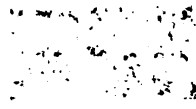
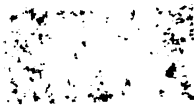


Dull Greenish Black (2)





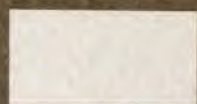
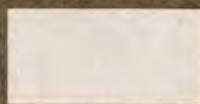


37<sup>mm</sup>. GG-G.

41<sup>mm</sup>. BB-G.

45<sup>mm</sup>. BB-B.



Glaucous-Gray



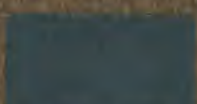
Pale Medici Blue



Pale Green-Blue Gray



Deep Glaucous-Gray



Light Medici Blue



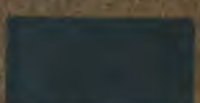
Clear Green-Blue Gray



Dark Glaucous-Gray



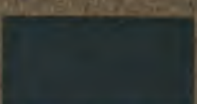
Medici Blue



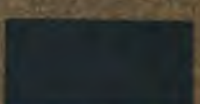
Deep Green-Blue Gray



Grayish-Blue-Green



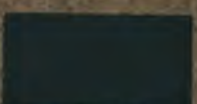
Deep Medici Blue



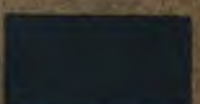
Dark Green-Blue Gray



Deep Grayish-Blue-Green



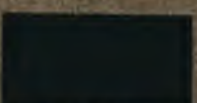
Dark Medici Blue



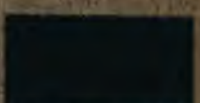
Green-Blue Slate



Dark Grayish-Blue-Green



Saccaro's Slate



Dark Green-Blue Slate



Greenish-Slate-Black



Dull Blue-Green Black



Bluish-Slate-Black







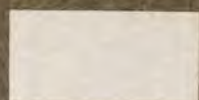


The image consists of a 3x3 grid of nine small, square, black and white photographs. Each photograph shows a different texture or pattern, possibly related to the book's theme of 'The Book of the Dead'. The textures range from smooth and uniform to highly irregular and complex, with some showing what might be ancient script or symbols. The overall effect is a collage of visual information that hints at the book's content.

49''' BLUE

53''' V.B.

57''' VB-V.



*f*



Pale Payne's Gray



Pale Violet-Plumbeous



Rood's Lavender

*d*



Light Payne's Gray

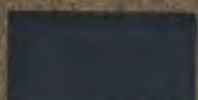


Light Violet-Plumbeous

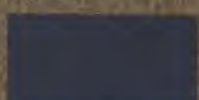


Pale Varley's Gray

*b*



Clear Payne's Gray



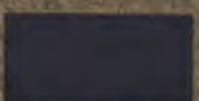
Violet-Plumbeous



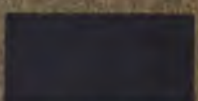
Light Varley's Gray



Payne's Gray



Deep Violet-Plumbeous

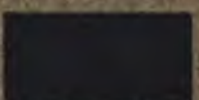


Varley's Gray

*i*



Deep Payne's Gray

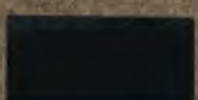


Violet-Slate

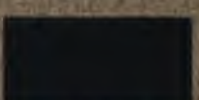


Deep Varley's Gray

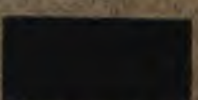
*k*



Dark Payne's Gray

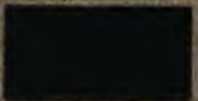


Dark Violet-Slate

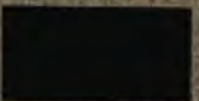


Dark Varley's Gray

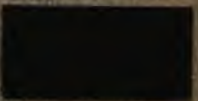
*m*



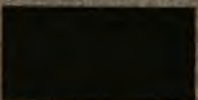
Bluish Black



Dull Violet-Black (2)



Blue-Violet Black





The first of these is the fact that the  
 government has been unable to raise the  
 necessary funds to carry out its  
 policy. This is due to the fact that  
 the government has been unable to  
 raise the necessary funds to carry out  
 its policy.

The second of these is the fact that  
 the government has been unable to  
 raise the necessary funds to carry out  
 its policy. This is due to the fact  
 that the government has been unable  
 to raise the necessary funds to carry  
 out its policy.

The third of these is the fact that  
 the government has been unable to  
 raise the necessary funds to carry out  
 its policy. This is due to the fact  
 that the government has been unable  
 to raise the necessary funds to carry  
 out its policy.

The fourth of these is the fact that  
 the government has been unable to  
 raise the necessary funds to carry out  
 its policy. This is due to the fact  
 that the government has been unable  
 to raise the necessary funds to carry  
 out its policy.

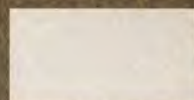
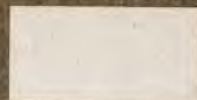
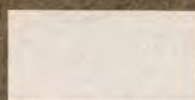
The fifth of these is the fact that  
 the government has been unable to  
 raise the necessary funds to carry out  
 its policy. This is due to the fact  
 that the government has been unable  
 to raise the necessary funds to carry  
 out its policy.



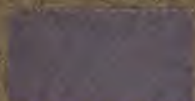
61<sup>100</sup> VR-V.

65<sup>100</sup> RR-V.

69<sup>100</sup> RV-R.



*f*



Light Plumbago Gray

Light Heliotrope Gray

Light Vinaceous-Gray

*d*



Plumbago Gray

Heliotrope Gray

Vinaceous-Gray

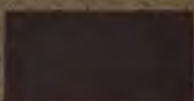
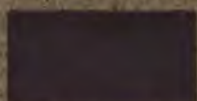
*b*



Deep Plumbago Gray

Deep Heliotrope Gray

Deep Vinaceous-Gray

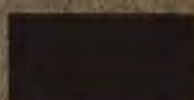


Dark Plumbago-Gray

Dark Heliotrope Gray

Dark Vinaceous-Gray

*i*

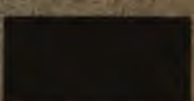
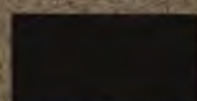
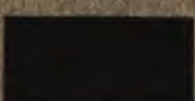


Plumbago-Slate

Heliotrope-Slate

Vinaceous-Slate

*e*

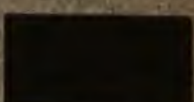
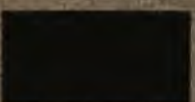


Dark Plumbago-Slate

Dark Heliotrope-Slate

Deep Slaty Brown

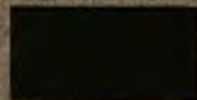
*pl*



Dull Violet-Black

Dull Purplish-Black

Aniline Black





THE [illegible] OF [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]





1. The first part of the document is a list of names and addresses of the members of the committee.

2. The second part of the document is a list of names and addresses of the members of the committee.

3. The third part of the document is a list of names and addresses of the members of the committee.

4. The fourth part of the document is a list of names and addresses of the members of the committee.

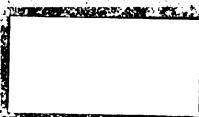
5. The fifth part of the document is a list of names and addresses of the members of the committee.

6. The sixth part of the document is a list of names and addresses of the members of the committee.

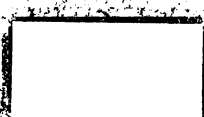
1<sup>st</sup> RED



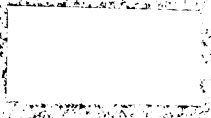
15<sup>th</sup> Y-O.



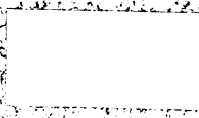
23<sup>rd</sup> YELLOW



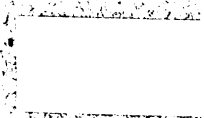
f



Pallid Quaker Drab



Pallid Mouse Gray

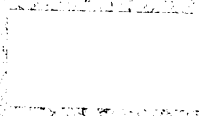


Pale Olive-Gray

d



Pale Quaker Drab



Pale Mouse Gray



Light Olive-Gray

b



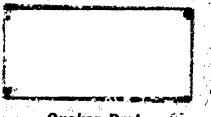
Light Quaker Drab



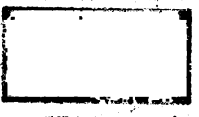
Light Mouse Gray



\*Olive-Gray



Quaker Drab

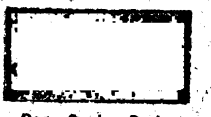


\*Mouse Gray

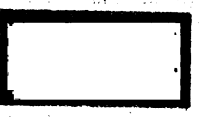


Deep Olive-Gray

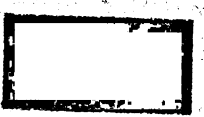
z



Deep Quaker Drab



Deep Mouse Gray



Dark Olive-Gray

k



Dark Quaker Drab



Dark Mouse Gray



Iron Gray

m



Sooty Black



Blackish Mouse Gray



Olivaceous Black (3)







1911

1912

1913

1914

1915

1916

1917

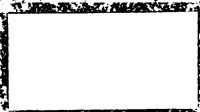
1918

1919

35'''' GREEN

49'''' BLUE

59'''' VIOLET



\*Pearl Gray

\*French Gray

\*Lilac Gray

d

Dawn Gray

\*Cinereous

Pale Violet-Gray

b

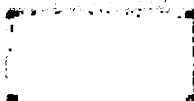
Hathi Gray

\*Plumbeous

Light Violet-Gray



Storm Gray



Deep Plumbeous



Violet-Gray

i



Castor Gray



Dark Plumbeous



Deep Violet-Gray

k



Dusky Green-Gray



Blackish Plumbeous



Dark Violet-Gray

m



Blackish Green-Gray



Plumbeous-Black



Blackish Violet-Gray





1943





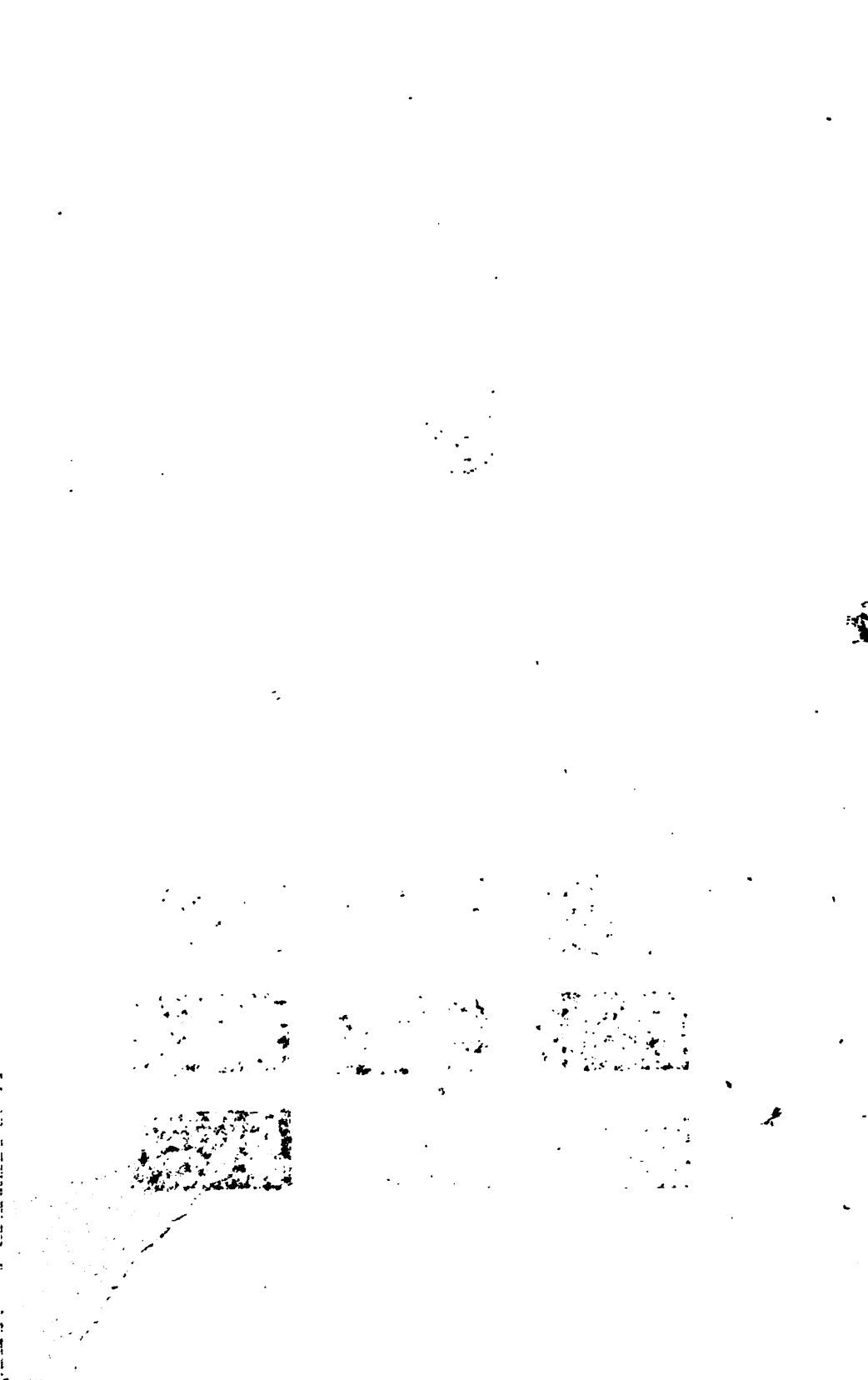
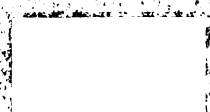
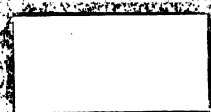
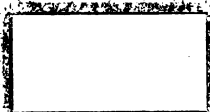


Plate LIII

67'''' V.R.

NEUTRAL GRAY

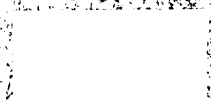
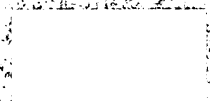
CARBON GRAY



White

White

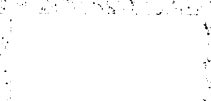
\*10. Gray. (Pale Gull Gray)



Pallid Purplish Gray

Pallid Neutral Gray

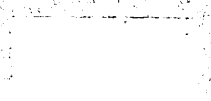
\*9. Gray. (Light Gull Gray)



Pale Purplish Gray

Pale Neutral Gray

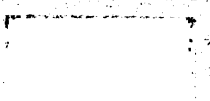
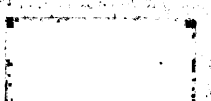
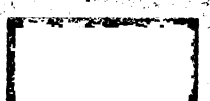
\*8. Gray. (Gull Gray)



Light Purplish Gray

Light Neutral Gray

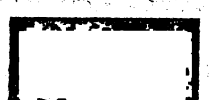
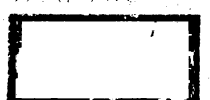
\*7. Gray. (Deep Gull Gray)



Purplish Gray

Neutral Gray

\*6. Gray. (Dark Gull Gray)



Deep Purplish Gray

Deep Neutral Gray

\*5. Slate-Gray



Dark Purplish Gray

Dark Neutral Gray

\*4. Slate Color



Dusky Purplish Gray

Dusky Neutral Gray

\*3. Blackish Slate



Black

\*1. Black

\*2. Slate-Black



